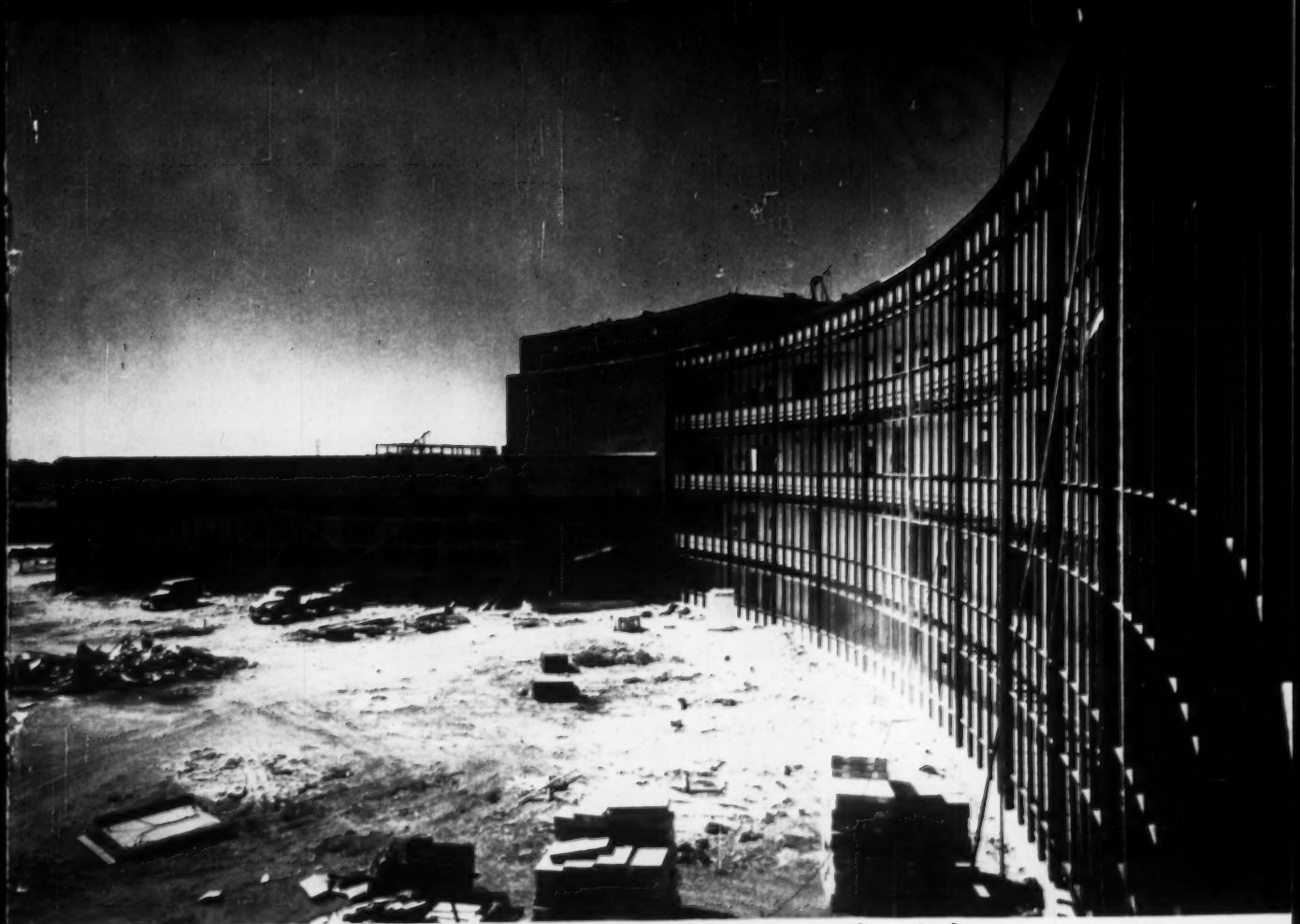
ENGINEERING NEWS-RECORD



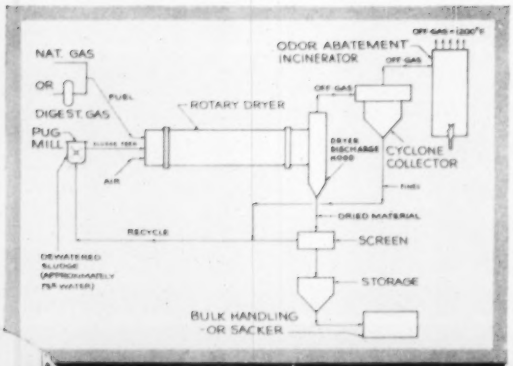
City hall's curve combines function, flexibility p. 30

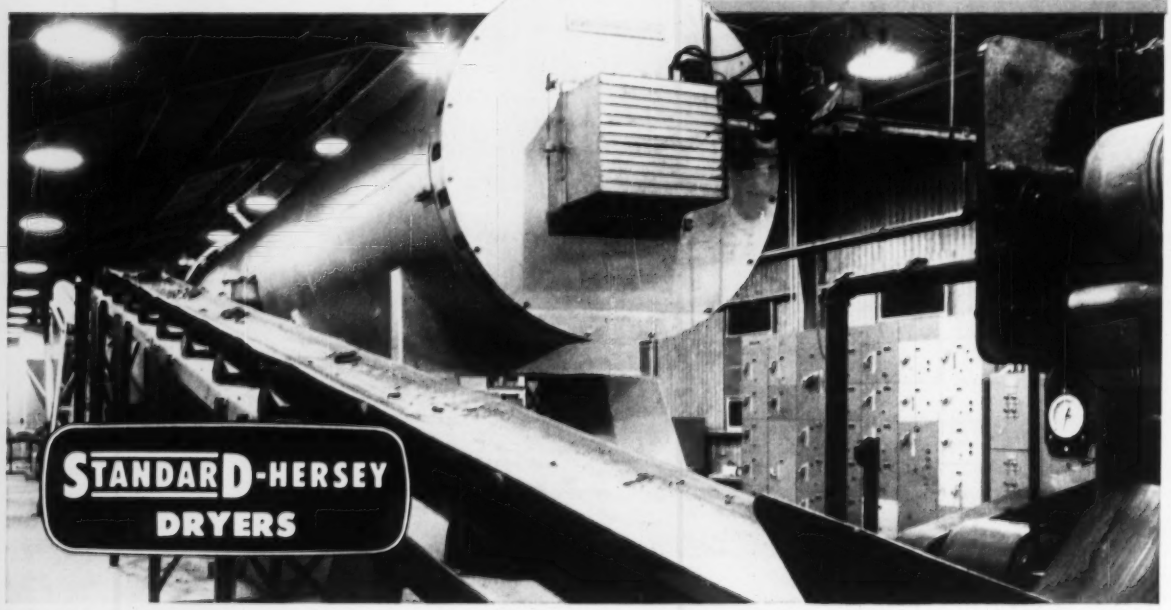
E B POWER
UNIVERSITY MICROFILMS I
313 N 1 ST
ANN ARBOR MICH

A McGRAW-HILL PUBLICATION

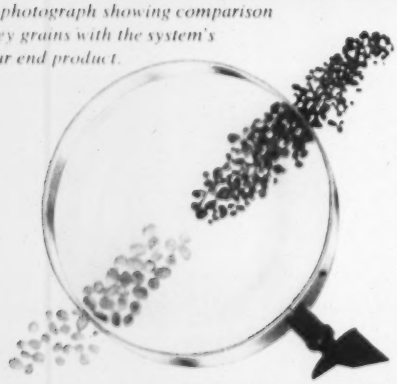
STANDARD Steel Produces A Lower Cost Sludge Drying System

**SAVES UP TO 50%
ON INVESTMENT–
LOWER OPERATING COST**





Actual photograph showing comparison of barley grains with the system's granular end product.



Rotary Drying Produces a Granular, More Marketable Product.

Standard Steel's new, packaged sludge drying system provides large and small communities with a low-cost, all weather sludge drying plant. This rotary drying system costs half as much to install... and even less to run – than other systems. It is a push button, fully automatic plant, usually requiring only one operator.

The end product is granular... thus avoiding a pelletizing step. The material is ready for the market within minutes after entering the system.

Investigate these Standard Steel plants that cost less, provide profits and improve community relations by removing obnoxious and space-consuming drying beds and lagoons.

STANDARD STEEL CORPORATION

General Offices & Plant, 5093 Boyle Avenue, Los Angeles 58, California

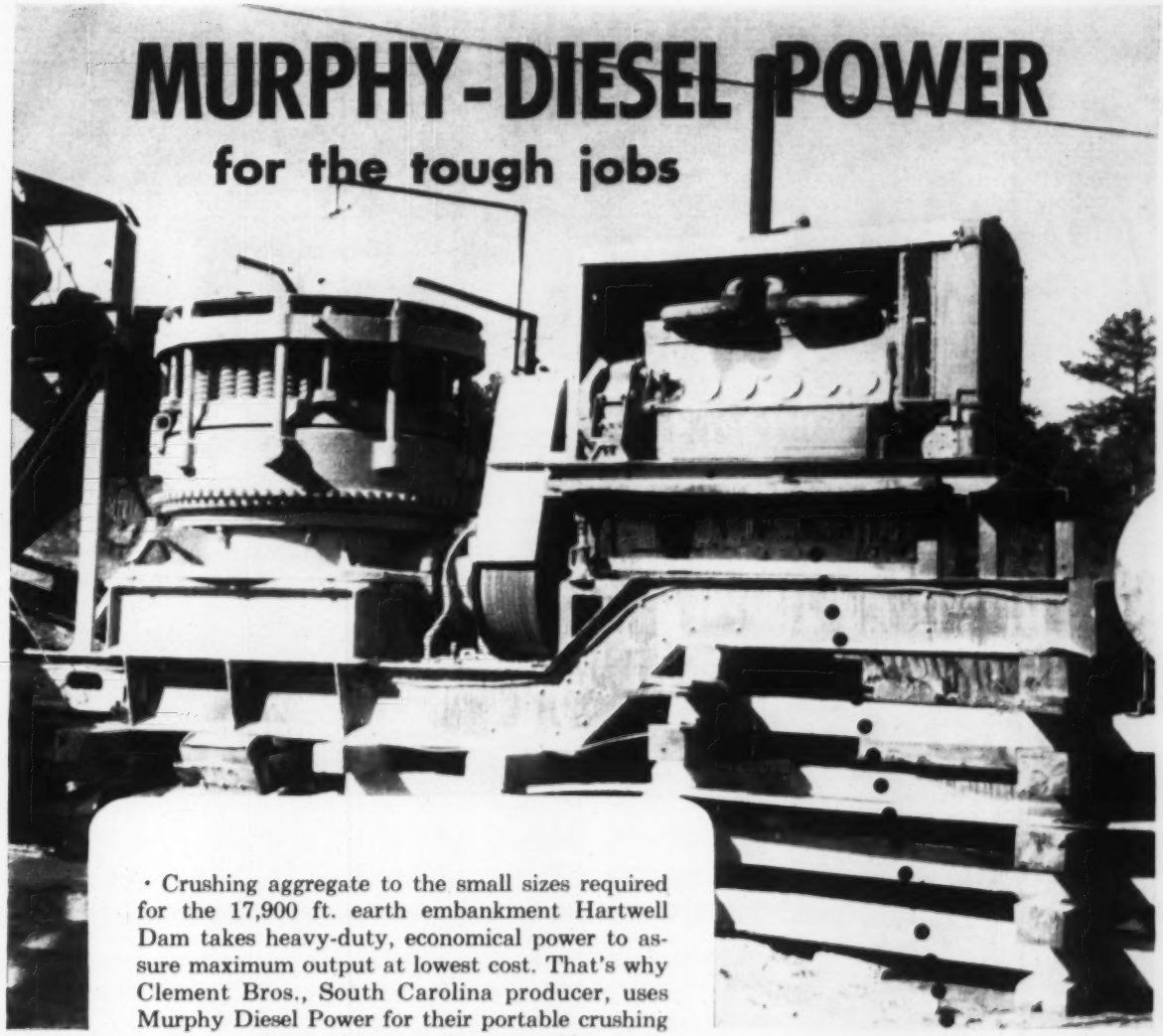
Midwest Offices & Plant **LEADER IRON WORKS** *Decatur 93, Illinois*

(Division of Standard Steel Corporation)

ROTARY DRYERS • KILNS • COOLERS • ASPHALT PLANTS

MURPHY-DIESEL POWER

for the tough jobs



• Crushing aggregate to the small sizes required for the 17,900 ft. earth embankment Hartwell Dam takes heavy-duty, economical power to assure maximum output at lowest cost. That's why Clement Bros., South Carolina producer, uses Murphy Diesel Power for their portable crushing and screening unit operating near Hartwell, Georgia.

When it comes to heavy-duty service, you can't beat Murphy Diesels for their dependability, fuel economy, trouble-free operation and long life, *unmatched by any other engine of comparable size.* Ask your Murphy Diesel Dealer to explain Murphy's many exclusive advantages before you decide on an engine.

371N

MURPHY DIESEL

HEAVY-DUTY POWER for Construction

Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.

MURPHY DIESEL COMPANY

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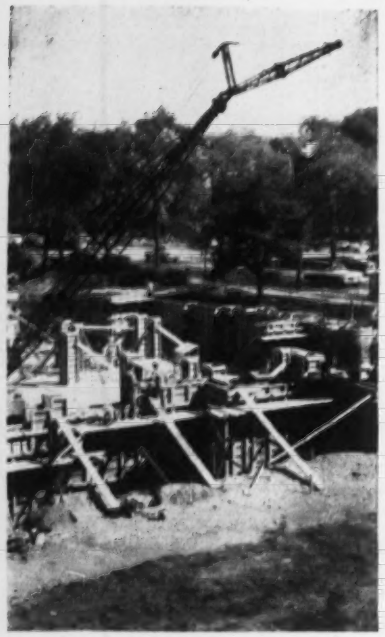
Throughout the Nation

Symons FIELD REPORT..



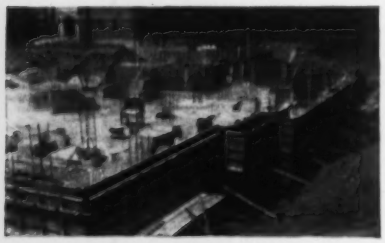
Contractor Pours 200 Yds. Concrete in One Day with
SYMONS FORMS

17,500 square feet of Symons Forms with steel cross members were used to form curved walls, large pilasters and stepped footings on the new addition to St. Scholastica School in Chicago. Walls varied in thickness from 18 to 20 inches and in height from 9 to 10 feet. During one shift, from 8:00 a.m. to 4:30 p.m., the contractor was able to pour 200 yards of concrete. Overall size of the project is 190 x 190 and estimated cost is in excess of $1,000,000.

Symons engineers and sales representatives can show you how Symons Forms solve many specific forming problems. For example, from your plans our engineers will prepare a complete form layout and cost sheets—no charge or obligation. Also, Symons salesmen are competent to advise your work crews on most efficient, cost-saving methods of form erection and stripping.

Forms may be rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. L-7, Chicago 39, Illinois.

Fred Berglund & Son, Inc., Chicago, Illinois, general contractor for St. Scholastica School job.



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EIGHTY-THIRD YEAR OF PUBLICATION

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Northwest dependability is a direct result of Northwest design. Power is brought to the action by the most direct route. Machinery Bases and Machinery Side Frames are heat treated, cast steel to take the shocks of digging. Parts and assemblies are ruggedly built and heavy enough for the job to be done. The simple "Feather-Touch" Clutch Control brings ease of operation and is free from compressors, valves, tubing and other delicate mechanisms. The Helical Gear Drive, the Cushion Clutch, Uniform Pressure Swing Clutches not only play a part in better output but they combine in smooth, trouble-free operation to *assure performance when it is needed.* Your Northwest is *always ready to go!* There is no more valuable quality in Shovel or Crane Equipment. You can buy it in a Northwest.

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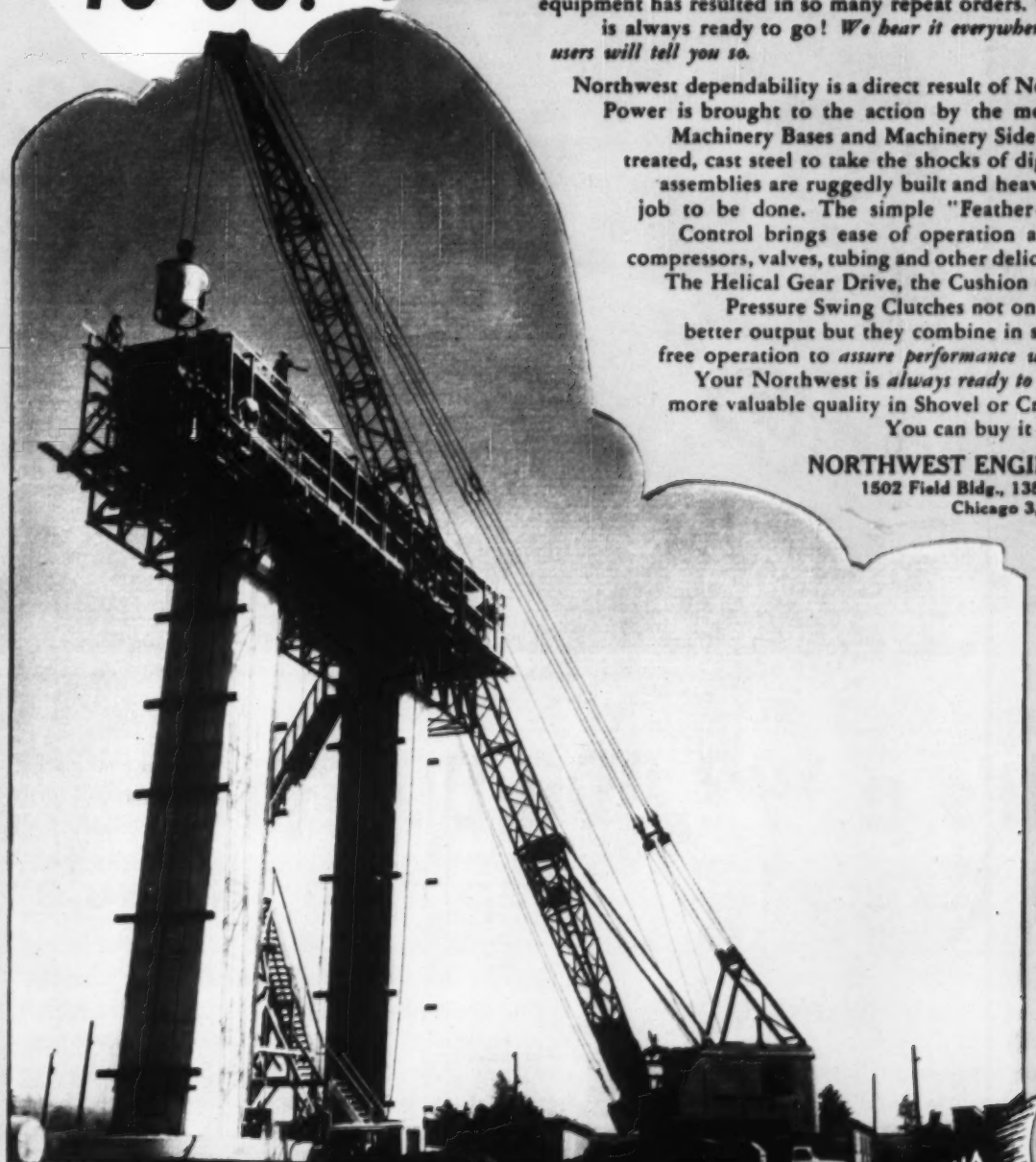

NORTHWEST *Always Ready to* **GO**

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Excavation for powerhouse at Priest Rapids Dam is over 4,000 feet long and between 40 to 90 feet deep.

It's a $92,000,000 job—
and Texaco helps keep it on schedule

This $92,000,000 Priest Rapids Dam project is the second largest competitively bid contract ever awarded to a single contractor. It is being constructed by Merritt-Chapman & Scott. There is no time for down-time on a colossal job like this, so Merritt-Chapman & Scott—knowing from past experience the value of a Texaco Simplified Lubrication Plan—started it off by calling in a Texaco Lubrication Engineer to work out a Plan.

This is the most far-sighted step in any lubrication program because it cuts inventory down to as few as 6 products to handle all major lubrication. That minimizes chances of making lubrication mistakes, and trims your maintenance expense. Above all, the Texaco Simplified Lubrication Plan is a big help in keeping your jobs on schedule.

Merritt-Chapman & Scott, for example, extend their engines' service period between overhauls with *Texaco Ursa Oil Super Duty Special*. They also get full rated engine power and save on fuel. They get long-lasting chassis protection by using

Texaco lubricants are used exclusively on the job by Merritt-Chapman & Scott.

Texaco Marfak. It doesn't pound or squeeze out. Wheel bearings get the same kind of protection from *Texaco Marfak Heavy Duty 2*. It seals itself in, seals out dirt and moisture, and needs no seasonal change. For transmissions and differentials, they use *Texaco Universal Gear Lubricant EP*.

Ask a Texaco Lubrication Engineer to work out a Texaco Simplified Lubrication Plan expressly for the problems of any job you're working on. Just call:

☆ ☆ ☆

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Huge dragline is one of several being used to build Priest Rapids Dam on Columbia River south of Vantage, Wash. All are kept operating at top efficiency with Texaco lubricants.

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

"LARGEST FILL IN OHIO" is how C. F. REPLOGLE Construction Co., Circleville, Ohio, describes the 97-footer on its U.S. Route 40 relocation job. Other cuts and fills run between 80 and 90 feet – and up to 70% of the material is broken limestone and sandstone. This is tough on tires–but Goodyear Triple-Tough 3-T Nylon Cord TUBELESS tires take it even better than tube-type, cut earth-mover tire down time to new LOWS. Tubeless tires shown at work are (left to right) new wide-base Sure-Grip Lug, wide-base Hard Rock Lug and standard All-Weather.

Up to 80% cut in earth-mover tire down time—

plus many other advantages!

Goodyear TUBELESS tires end tube and flap troubles—causes of as much as 80% of earth-mover tire down time. They also end costs of tube replacement and many-item inventories.

You save man-hours, too—for mounting is simple and emergency repairs may often be made *without removing tires at all!*

AND you save tires—for with Goodyear TUBELESS, small injuries usually show *before* they get serious.

Be sure *you* specify *Goodyear* TUBELESS tires on all new equipment—and see the *Goodyear* dealer for change-over of present vehicles. Goodyear, Truck Tire Dept., Akron 16, Ohio.

ON-JOB SERVICE BOON TO CONTRACTORS. Priceless time and valuable tires are saved by this fast and expert service. Strategically located Goodyear shops and field crews are convenient to jobs almost anywhere.

Buy and Specify **GOODYEAR**

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

All-Weather, Road Lug, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Look for this nearby Goodyear dealer sign for better tire values —better tire care.

Now Tubeless or Tube-Type with Triple-Tough 3-T Nylon Cord

ALL-WEATHER EARTHMOVER

HARD ROCK LUG

HARD ROCK RIB

SURE-GRIP LUG

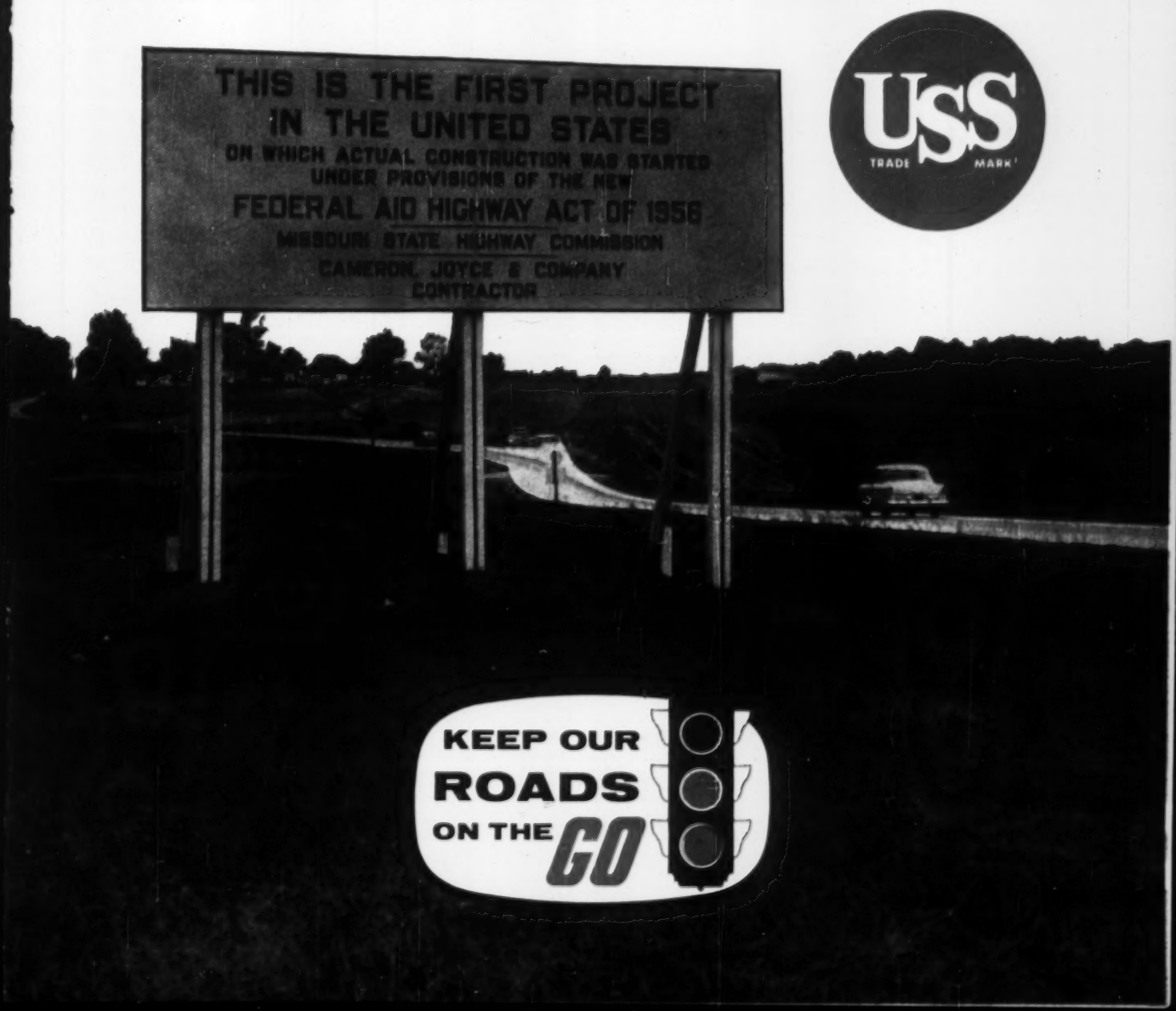
ROAD LUG

Missouri "shows" the nation! First state to start construction on Interstate Highway Program

THE FIRST STATE to begin actual work under the new Interstate Highway System, Missouri, as of September 15, had completed approximately 15 miles of highway and had another 43 miles under construction, with a total contract cost of $40,145,448.42. When the Interstate Program is completed, Missouri will have added about 1,100 miles to her highway system . . . to contribute to her reputation as "The Crossroads of the Nation."

Part of this new system appears in the accompanying photograph. This is US Route 40—the Mark Twain Expressway through St. Charles County—and it was right here that the first work was done on this vast road network program.

Elsewhere in Missouri—in Laclede, St. Charles, Pulaski, St. Louis, Jackson, Boone, Cooper, Platte, Clay and Greene Counties—work is completed or under construction on other segments of the Missouri Interstate Highway System under the supervision of Rex M. Whitton, Chief Engineer.



. . . and products of United States

Racing eastward through St. Charles County, over the Missouri River goes the Mark Twain Expressway. Destination: St. Louis. In finished highways like this, many products of United States Steel are usually well represented. For paving materials U. S. Steel offers ATLAS DURAPLASTIC air-entraining portland cement, UNIVERSAL portland slag cement, as well as UNIVERSAL and ATLAS portland cements.

Another use for steel in the Federal Highway Program is in the bars needed for concrete reinforcement. At the present time, it is estimated that more than 3½ million tons of concrete structural bars will be required to reinforce piers like these on the Mark Twain. USS DI-LOK Reinforcing Bars have a continuous, diamond-locking deformation that assures positive anchorage, reducing cracking to a minimum.

Roadbed goes down for the Mark Twain Expressway. One of the most important steel products for road construction is the wire fabric used to reinforce concrete. Approximately 3,212,450 tons of steel wire fabric will be needed to reinforce the roadbeds of the highways now on work or in planning for the total Federal Highway Program. Another product of U. S. Steel—AMERICAN Welded Wire Fabric—is available for this use. AMERICAN Welded Wire Fabric is made of high-grade, cold-drawn steel and is able to withstand high unit stresses. Its use permits construction of slabs from 50 to 100 feet long and provides a smoother-riding, longer-wearing pavement.

Steel help keep highways rolling

Here's how Missouri roads are growing:

- On US 66, through Laclede and Pulaski Counties, more than 14 miles of new highway have been completed, and nearly 12 more miles are under construction.
- On Route 66, in Greene County, near Springfield, more than 9 miles of highway will soon be finished.
- In downtown St. Louis, and US 40 through St. Charles County, 12 more miles of the new highway system are nearing completion.
- On Route 40, near Columbia, Mo., almost 8 miles of highway are being built, including piers for the new Missouri River Bridge.
- Near Kansas City in Jackson, Platte and Clay Counties, on Routes 40 and 71, nearly three more miles of highway are under construction at the present time.

Near St. Louis, giant earth-movers rip out soil for the Mark Twain Expressway. Since it is estimated that on modern highways one million cubic feet of dirt are moved per mile of road, there is plenty of work ahead for these monsters in Missouri. If the many types of earth-movers used in road building are to do a good job and do it steadily, day after day, without frequent visits to the repair pit, they must be well-made of strong, sturdy materials—materials like USS High Strength Steels—COR-TEN, MAN-TEN, TRI-TEN brands—and USS "T-1" Constructional Alloy Steel. While each of these steels has special properties that make it ideal for specific uses, all are alike in their ability to stand up under hard, bruising service.

This intricate steel framework arching over the Missouri River near St. Charles symbolizes the many bridges yet to be built in the Interstate controlled-access highway system. Many USS Structural Steel Shapes and Beams, plus many others, will find wide use in all types of bridges in this new highway system.

KEEP OUR ROADS ON THE GO

USS TRADE MARK

UNITED STATES STEEL

Only United States Steel can offer you such a complete line of products for Highway Construction

Special Steels for Construction Equipment

Abrasion-resisting steel
Constructional alloy steel, *Carilloy* and *"T-1"*
High strength, low alloy steels, *Man-Ten, Tri-Ten* and *Cor-Ten*
Grader blades, *AmBridge*
Wire rope, *Tiger Brand*
Tubing, seamless mechanical, *Shelby*

Drainage Products

Sectional plate pipe, pipe arches and arches, *AmBridge*
Culvert sheets, corrugated steel
Culvert pipe
Culvert pipe, perforated
Road flume, *Ro-Drain*

Bridges and Bridge Foundations

Bridge fabrication and erection
Structural steel shapes and plates, carbon, alloy and high strength
Bearing piles, steel H-Beam
Bearing piles, tubular steel, *National*
Sheet piling, steel
Concrete reinforcing bars, straight and bent, *Di-Lok*
Bridge flooring, concrete-filled, *AmBridge I-Beam-Lok*
Bridge flooring, open grid, *AmBridge I-Beam-Lok*
Bridge sidewalk flooring, Tee-type, *AmBridge*
Bridge railing, pipe, *National*
Grating, expanded metal
Expansion joints
Bridge nuts, pins and tie-rods
Rivets
Eye-bars
Bolts, high strength steel
Rivet bolts, high strength steel
Creosote—for pressure treating bridge flooring and wood piling

Pavement Construction Products

Portland cements, *Universal* and *Atlas*
Portland slag cements, *Universal*
Air-entraining portland cements, *Atlas Duraplastic*
Air-entraining portland slag cements, *Universal*
High-early portland cements, *Atlas*
White cements, *Atlas*
Concrete reinforcing bars, straight and bent, *Di-Lok*
Alloy steel reinforcing bars, *Carilloy*
Welded wire fabric for reinforcing concrete, *American*
Stress-relieved strand and wire for prestressed concrete, *Super-Tens*
Concrete forms
Concrete form insulation
Road-joint assemblies, *American*
Air-cooled blast furnace slag, crushed and screened
Air-cooled blast furnace slag, uncrushed
Granulated blast furnace slag

Safety Equipment and Highway Accessories

Beam guard rail, *AmBridge* and *American*
Multisafty Cable Highway Guard, *American*
Highway guard rail, *Western*
Highway guard rail posts
Double-duty traffic markers
Pipe for radiant heating and snow-melting installations, *National*
Electrical wire and cable, *Tiger Brand*
Pipe for conduit, *National*
Generator units, *Witte*
Woven wire fence, *American*
Chain link fence, *Cyclone*
Barbed wire, *American*
Fence gates, *American*
Fence posts, *American*
Fence staples, *American*
Fence tools, *American*
Creosote—for pressure treating wood fence posts
Building construction service
Steel for buildings, maintenance, utility, temporary offices
Joists, open-web steel, *AmBridge*
Sheet steel, corrugated
Sheet steel, galvanized
Nails, *American*
Pipe, black and galvanized, *National*

The products and services indicated above are available from one or more of the United States Steel Divisions. USS offices are located in almost all major cities. Feel free to call on the office nearest you at any time—or write to:

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Pittsburgh 30, Pennsylvania

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Reader Comment

Rockfill Dam Definition

SIR—I would like to enter the argument about the definition of a rockfill dam (ENR Oct. 3, p 11 and Oct. 24, p 96) and wish to propose the following:

> "A rockfill dam is a type of dam which for its stability depends on loosely dumped rock"

This definition applies equally well to a rockfill dam having the watertight zone (any of the commonly used types) located at or near the upstream face, or in the center. It would place both the Mud Mountain and Ambuklao dams in the rockfill class.

In this connection, I wish to take strong exception to the often seen expression "rock- and earthfill dam". Such a dam is not a distinct type in my opinion, but simply an earth dam having oversized rock shells in both outside zones. The incorporation of dumped rock in excess of the minimum design requirements (riprap) is often dictated by economics, involving the utilization of available rock from excavation for structures (outlets, spillways). The internal rolled-fill portion would stand by itself, even if the factor of safety were near 1.0. But take away the dumped rock from a rockfill dam according to my definition, and we would soon be without a dam.

A. L. ALIN
Consulting Engineer
Omaha, Nebraska

Further Details

SIR—With regard to the item appearing in ENR June 27, p. 92, describing our new Lagunela station, this company would like to make some additions.

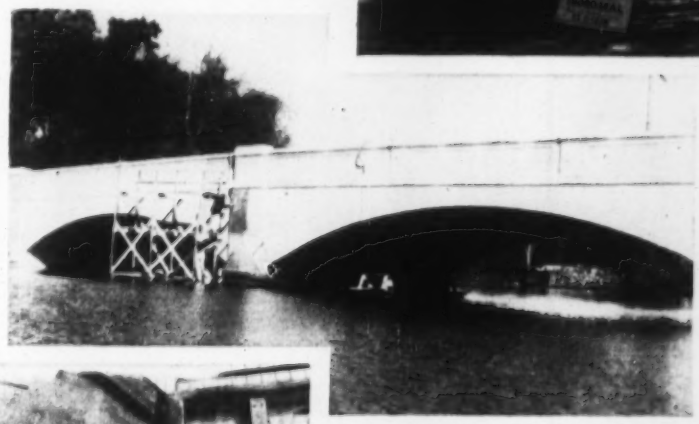
The whole project was planned and carried out by this company, Empresas Unidas de Energia Electrica de Bogota, the city-owned public utility serving Bogota. The now-extinct National Public Service Corp. commenced operation after the project was under way and at no time was involved in any aspect of it.

Preliminary engineering was in charge

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

It's New Again with THORITE and THOROSEAL

Freeze-thaw cycle following water and moisture penetration, also swelling of reinforcing rods from moisture contact, cause masonry destruction.



BRIDGE OVER CONCORD RIVER
ROUTE 3, BELLERICA, MASS.

Workmen on scaffold patch spalled and cracked concrete with THORITE and seal surface with THOROSEAL.

Area at left chipped to sound masonry. It will then be patched with THORITE *Nonshrink, Nonslump 20-Minute Set Patching Mortar*, without necessity of costly forming, finished by application of Thoroseal.

Request Circular No. 16 and 20.

Write for our 16 page "How to Do It"

STANDARD DRY WALL PRODUCTS, INC.
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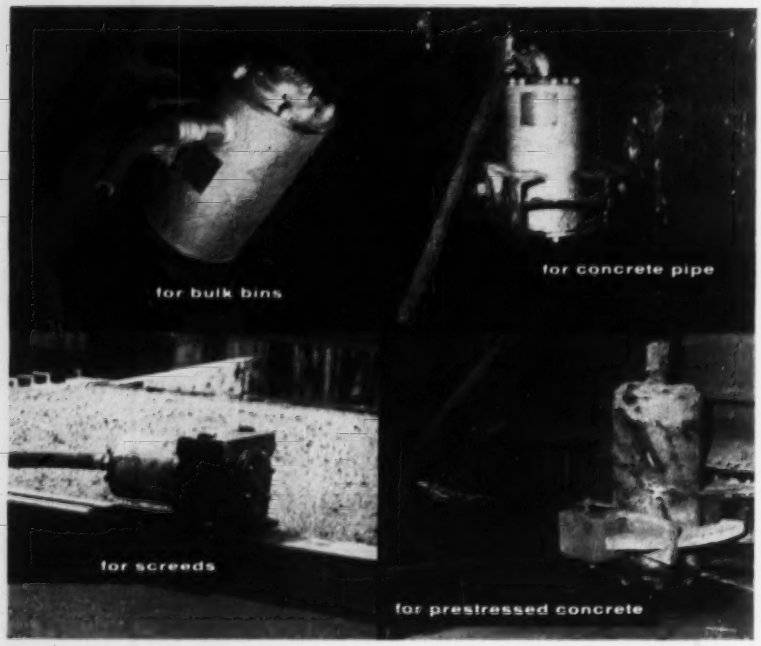

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. . . Reader Comment

of Motor Columbus of Baden, Switzerland, and of Edgard Jeuch working for Empresas. When the project was definitely launched, Gai-Pan American Corp., subsidiary of Gilbert Associates of Reading, Pa., was appointed consulting engineer and executed the final design work.

With respect to the equipment suppliers, only the generators were supplied by Canadian General Electric. The rest of the power plant equipment came from various suppliers, notably the penstocks being from MAN, the transformers from AEG, and the switchyard and all control gear from Westinghouse International.

MANUEL MADERO PARIS
Manager
Empresas Unidas de Energia Electrica de Bogota
Bogota, Colombia

Failure Report Not Official

SIR—I note with interest your report on the Blankner Elementary School collapse in ENR July 11, p. 28. I wish to request the correction of one item in this report.

The report states: "The official investigating board, composed of: . . . ". It is my understanding that the investigating board was appointed by J. Ashton Gray, then president of the Prestressed Concrete Institute, whereas your article may give the incorrect impression that the investigating board was an official board representing the architect, general contractor, school board and the prestressed concrete producer.

ROBERT B. MURPHY
Architect
Orlando, Fla.

CALENDAR

National Construction Industry Conference, 3rd annual conference, Congress Hotel, Chicago, Ill., Dec. 4-5.

Building Research Institute, adhesives and sealants conference, Shoreham Hotel, Washington, D. C., Dec. 4-5.

The Asphalt Institute, annual meeting, New York Athletic Club, New York, N. Y., Dec. 4-5.

Created Trends in Structural Design, Armour Research Foundation, Illinois Institute of Technology, Chicago, Dec. 11-12.

National Construction Industry Conference, Congress Hotel, Chicago, Ill., Dec. 11-12.

Highway Research Board, annual meeting, Sheraton-Park Hotel, Washington, D. C., Jan. 6-10.

National Association of Home Builders, annual meeting, Conrad Hilton Hotel, Chicago, Ill., Jan. 19-24.

American Road Builders Association, annual meeting, Sheraton-Park Hotel, Washington, D. C., Jan. 20-23.

Associated Equipment Distributors, annual meeting, Conrad Hilton Hotel, Chicago, Ill., Jan. 26-30.

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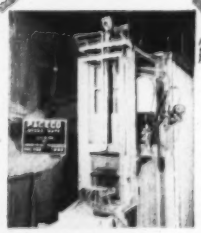
Paceco tests reduced 540 tons estimate to 390 tons exact requirement



Downstream view of gate well section showing gate and gate hydraulic control system.

Test apparatus showing air bubble flow pattern for typical gate lip.

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THE CONSTRUCTION WEEK

FLORIDA BUILDERS TO START RESEARCH—Turpin C. Bannister, dean of the University of Florida's College of Architecture and Fine Arts, has disclosed plans for a research organization to be called the Florida Foundation for the Advancement of Building. Representatives of Florida's contractors and lumbermen have met with Dean Bannister to start incorporation of the organization. The aim of the association is to get the state's building industry to turn one-twelfth of 1% of its profits to building research. It is estimated that $160 million can be saved in the state over the next 13 years if proper research is conducted.

END OF STORY—The 19-month-old story of Pennsylvania's action against contractors accused of defrauding the state on a mine-filling contract (to stabilize the bed of a turnpike extension) came to an end in Harrisburg. A county court jury convicted eight men of conspiring to defraud the state of almost $500,000. The action started early in 1956 (ENR May 10, 1956, p. 27) when the state jailed five men—four of them officials of two contracting firms, the fifth an official of Manu-Mine Research and Development Co. of Scranton—on the charge, cancelled contracts totaling over $3 million.

PLUMBING ENGINEERING COUNCIL ENDORSED—The establishment of a Plumbing Engineering Council, proposed by the Building Research Institute's Plumbing Research Committee, has been endorsed by the American Society of Sanitary Engineering, an organization of plumbing contractors. Objectives of the PEC will be the development of more and better standards, upgrading of existing standards and establishment of uniform testing procedures. Next step in the council's formation will be the sounding out of plumbing fixtures and components manufacturers on supporting the proposed organization.

WORKING FOR BIG BONUS—Prediction that Priest Rapids Dam on the Columbia River will deliver its first power in the fall of 1959, a year and a half ahead of schedule, was made recently by the manager of the Grant County Public Utility District. This achievement would win a $4 million to $5 million bonus for the contractor, Merritt Chapman & Scott Corp., and it would enable the PUD to sell an additional $15 million worth of power. Merritt-Chapman & Scott's project estimate for November is expected to be about $3.5 million, which would make it the "biggest project estimate ever submitted by a contractor for a single month," according to a PUD spokesman. The $91.9 million contract, on which work was started in July of last year, now is 28% completed, the meeting was told.

The finest structures rest on

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Church of Santa Maria Reina at Ponce, Puerto Rico

This beautiful church with its unique concrete arch roof was designed by O'Kelly & Mendez, Architects and Carl B. Brunner, Jr., Designer. The Contractor was Santoni & Vivoni. For over 60 years, we have provided foundations for the finest structures in America, and for almost as long, offered complete construction services abroad. Investigate the advantages of using Raymond methods and experience on your next foundation project. For further information, write or call our main office at 140 Cedar Street, New York 6, or one of our Branch Offices across the country, or our subsidiaries in Canada, Central and South America. Our New York telephone number is Cortland 7-7070.

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WASHINGTON OBSERVER

- **SAC dispersal: $200 million item**
- **New business abroad: IRBM bases**
- **At home: Economy battle is due**
- **Homebuilding aid plan misfires**

● **Some $200 million will be spent this year to build dispersal bases for the Strategic Air Command**—which flies B-52s and B-47s. The President's announcement that more dispersal is needed will speed up the program, which began some years ago. So far, work on about a dozen dispersal air strips is under way—costing some $350 million. Congress has voted money for 28 bases in the continental United States.

The expansion can go ahead without further Congressional okay. The military wants to equip bases for faster takeoff of more planes besides spreading the flight areas away from command centers, in order to present to the Soviets a smaller bombing or missile target.

● **Building of intermediate ballistic missiles bases** abroad will be a new source of business as a result of the President's atmosphere of urgency policy. The U. S. will begin negotiations with NATO nations in December for delivery of IRBMs abroad, and for missile sites.

The work will follow once the military decides on the Army Jupiter missile, or the Air Force Thor. The decision will come soon.

● **A fight is almost inevitable over Administration civilian programs.** Congressmen are beginning to line up behind their pet programs, to fight back on Administration threats to cut welfare and public works projects to find the money for more military spending. Westerners are going to fight to keep reclamation and Corps of Engineers projects going; the school bloc will continue to urge federal aid for school construction.

The Administration is willing to make the issue—put Congress on the spot in an election year.

● **The Administration, still casting about for ways to help housing, finds little Congressional support for its newest idea.** Housing chief Albert Cole threw out the idea last week—as a trial balloon—and it was punctured pretty quickly.

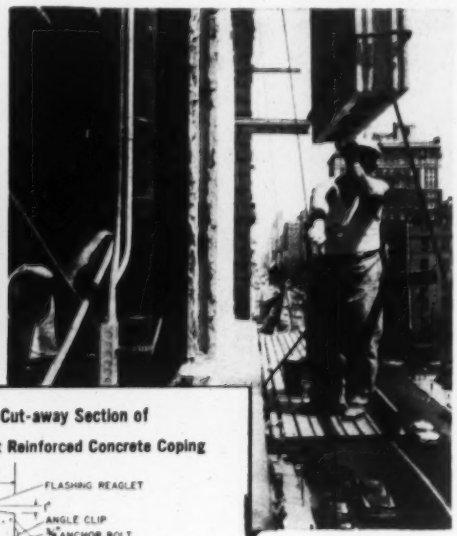
The scheme: have FHA insure the top 20% of some conventional loans. Mr. Cole's argument is that lenders would be encouraged to make home loans of a higher percentage of value, at interest rates more nearly reflecting reality of current markets. In theory, it would work like this: The home buyer would pay down 10%, the lender would assume 70% of the risk, and FHA would guarantee the remaining, final 20%; in other words, the portion containing the profit or loss potential.

There's little chance of Congressional approval—if, indeed, the proposal ever gets to Congress. Rep. Albert Rains, influential chairman of the house subcommittee on housing, could—and would—block it. Congressman Rains calls it ill-conceived, hastily concocted, and figures it was cooked up solely to embarrass the savings and loan associations that have offered a similar plan.

The subject of what to do for homebuilding is a live one elsewhere. The Congressional Joint Economic Committee, under chairmanship of Rep. Wilbur Mills, turned to housing problems this week in its continuing study of the impact of federal programs on the overall economy.

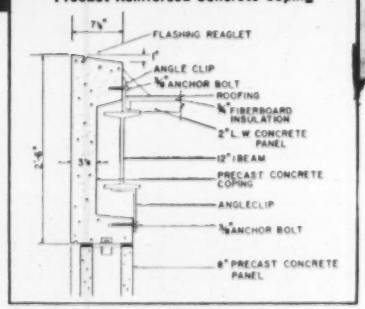
Going-Gone-Up!

PRECAST 'INCOR' CONCRETE PANELS SOLVE PROBLEM OF ADDING STORY



Guiding panel into position. Panel in background is already anchored.

Cut-away Section of Precast Reinforced Concrete Coping



● World-famous Parke-Bernet Galleries in New York are headquarters for auction sales of fine furniture, jewelry, and works of art. The business has expanded so rapidly that it was necessary to add another story to Parke-Bernet's building.

The building's frame had been designed to carry only the existing number of floors with walls of Indiana limestone. The problem was to add a lightweight wall to match limestone.

Precast concrete hollow core panels solved the problem. They not only met building code regulations on weight (they weigh only 40 lbs. per sq. ft.)—*they saved time and money!*

To add the right texture to the panels, a special mixed topping was troweled on before the concrete had set. The result: panels that matched perfectly in texture and color—fire-safe, durable, weather-resistant.

Panels were cast off the job using 'Incor'* 24-Hour Cement. Panels are lifted 18 to 24 hours after casting, cured 2 days, then stored in yard. Dependable 'Incor' high early strength assures clock-like schedules.

Here's still more proof of the beauty and versatility of precast concrete panels—and assembly-line methods applied to construction which help cut costs and solve a knotty problem.

*Reg. U. S. Pat. Off.

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General Contractor: **HOWARD GRIMM, INC.**
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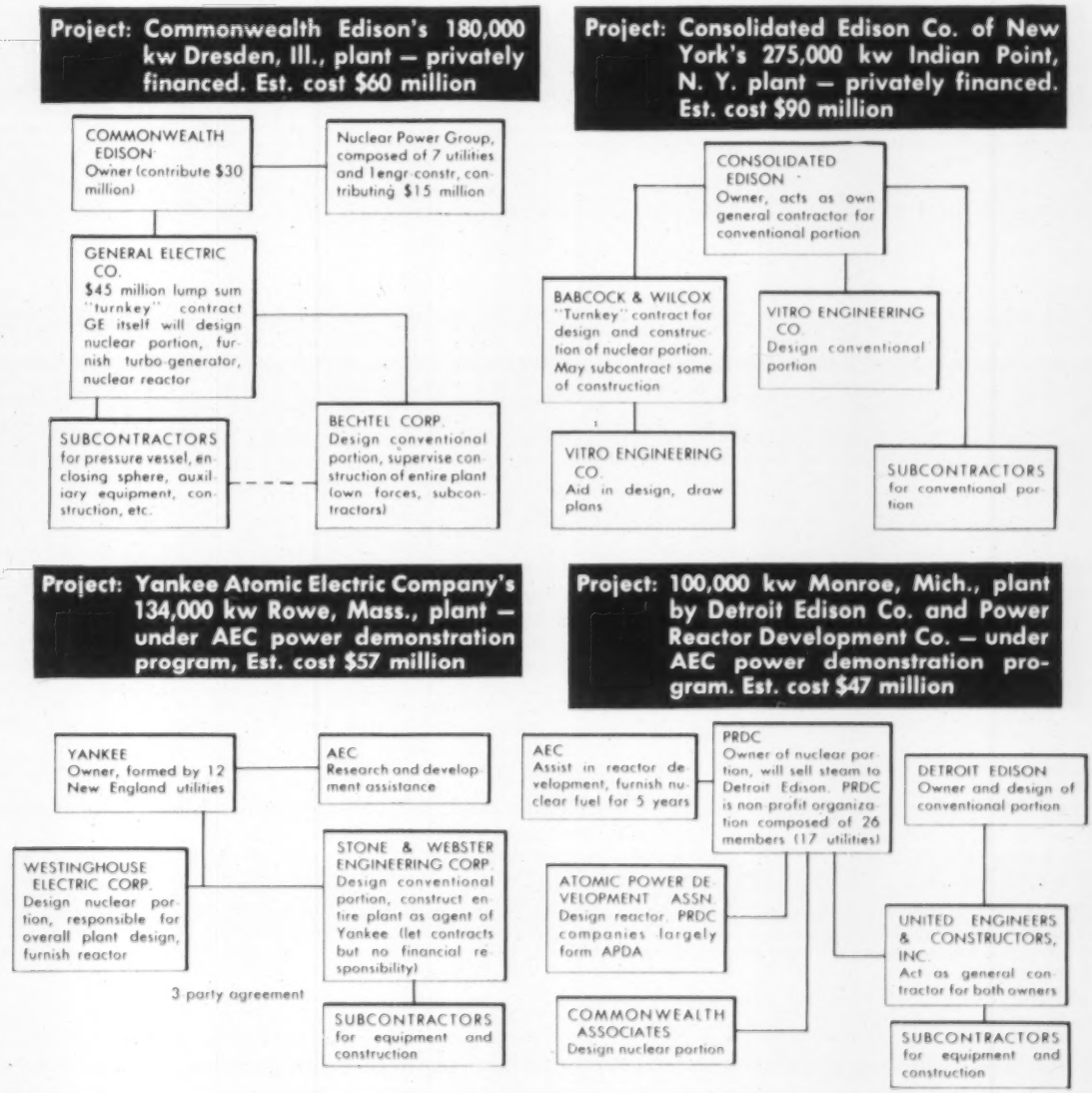

Project: Commonwealth Edison's 180,000 kw Dresden, Ill., plant — privately financed. Est. cost $60 million
COMMONWEALTH EDISON
Owner (contribute $30 million)
Nuclear Power Group, composed of 7 utilities and 1 engr-constr, contributing $15 million
GENERAL ELECTRIC CO.
$45 million lump sum "turnkey" contract GE itself will design nuclear portion, furnish turbo-generator, nuclear reactor
SUBCONTRACTORS
for pressure vessel, enclosing sphere, auxiliary equipment, construction, etc.
BECHTEL CORP.
Design conventional portion, supervise construction of entire plant (own forces, subcontractors)
Project: Consolidated Edison Co. of New York's 275,000 kw Indian Point, N. Y. plant — privately financed. Est. cost $90 million
CONSOLIDATED EDISON
Owner, acts as own general contractor for conventional portion
BABCOCK & WILCOX
"Turnkey" contract for design and construction of nuclear portion. May subcontract some of construction
VITRO ENGINEERING CO.
Design conventional portion
VITRO ENGINEERING CO.
Aid in design, draw plans
SUBCONTRACTORS
for conventional portion
Project: Yankee Atomic Electric Company's 134,000 kw Rowe, Mass., plant — under AEC power demonstration program, Est. cost $57 million
YANKEE
Owner, formed by 12 New England utilities
AEC
Research and development assistance
WESTINGHOUSE ELECTRIC CORP.
Design nuclear portion, responsible for overall plant design, furnish reactor
STONE & WEBSTER ENGINEERING CORP.
Design conventional portion, construct entire plant as agent of Yankee (let contracts but no financial responsibility)
3 party agreement
SUBCONTRACTORS
for equipment and construction
Project: 100,000 kw Monroe, Mich., plant by Detroit Edison Co. and Power Reactor Development Co. — under AEC power demonstration program. Est. cost $47 million
AEC
Assist in reactor development, furnish nuclear fuel for 5 years
PRDC
Owner of nuclear portion, will sell steam to Detroit Edison. PRDC is non-profit organization composed of 26 members (17 utilities)
DETROIT EDISON
Owner and design of conventional portion
ATOMIC POWER DEVELOPMENT ASSN.
Design reactor. PRDC companies largely form APDA
UNITED ENGINEERS & CONSTRUCTORS, INC.
Act as general contractor for both owners
COMMONWEALTH ASSOCIATES
Design nuclear portion
SUBCONTRACTORS
for equipment and construction

The Crazy-Quilt Nuclear Power Business

Compared to the well ordered business of building conventional thermal power plants, the design and construction management of nuclear plants in the U.S. today is completely topsy-turvy.

Actual field construction is fairly typical, with the nation's general and specialty contractors, along with conventional component manufacturers, performing their accustomed work. What's extraordinary is for whom they are working. It is hardly exaggerating to say that on many current jobs, they aren't sure.

In conventional power work, contractors and makers (who actually custom design their own apparatus) generally are supervised by a specialist design and construction management firm—typified by companies like Ebasco, Burns & Roe, and Stone & Webster—employed by the owning utility. Consulting engineer-constructors commonly act as agent of the owner in dealing with contractors and suppliers, although in recent years a few conventional power plants have been built on a "turnkey" basis with the engineer-constructor assuming all or part of the construction risk by signing a lump sum contract with the owner.

• **Current American practice**—The advent of nuclear power construction in the U.S.—and abroad—has torn asunder the time-honored power industry relationships. At the present time major component suppliers act in the prime

. . . The crazy-quilt nuclear power business

relationship with owners, with the engineer-constructor employed as subcontractor. Turnkey, or fixed-price contracts are in vogue. Projects are split into conventional and nuclear portions, each having a separate organization.

A new group of consulting engineers those with experience on wartime and subsequent atomic projects—are emerging as strong contenders for engineer-constructor roles. Manufacturers are moving in and out of the nuclear reactor and ancillary reactor equipment business with confusing rapidity. And groups of utilities, equipment makers, engineer-constructors and other industrial firms have banded together to help finance as yet uneconomical nuclear power projects.

There is then, no normal procedure for building U. S. nuclear plants today; some of the crazy-quilt organizational patterns are illustrated on the preceding page.

• **Why patterns developed**—What's happening in the U. S. is this: Competitive nuclear power is still some years off—estimates vary from 5 to 20 years. There are about 1.4 million kw of nuclear power plants under way, designed or in the likely-to-proceed stage. Recently, the first commercial plant—a 5,000 kw installation at Vallecitos, Calif., owned by Pacific Gas & Electric and General Electric Co.—was placed in operation.

Aim of the 15 or so U. S. plants, publicly or privately financed, is to develop a reactor type that can produce economical power. Most authorities believe the U. S. has time to do this in an orderly manner, for its conventional power is still relatively low cost and fuels are in plentiful supply.

On the other hand, European countries are faced with already high power costs, relative to the rest of the economy, and insufficient or uncertain supplies of low cost fuels. So England, as the leading example, is going full speed ahead on a 10 year 6 million kw program to cost some $2.8 billion, based on one type of reactor (natural uranium fuel, gas cooled). But even the most optimistic British cost estimates for their type reactor, when translated in terms of the lower power cost, higher construction and financing cost in the U. S. economy, are too high to compete in this country. The actual numbers are, roughly, 7.5 mills per kwh in Britain, 15 mills to duplicate in the U. S. versus 5 to 12 mills for thermal power in the U. S.

This diverse world situation is contributing greatly to the unusual patterns currently manifested in the U. S. nuclear power business.

It is logical that prime responsibility for design and construction of something new be vested in an agency with experience in a closely allied field. When planning of nuclear power plants began in earnest about five years ago, the experienced firms were equipment manufacturers and nuclear engineers who had participated in the wartime A-bomb work and postwar construction of Atomic Energy Commission installations and the atomic submarine. Conventional power industry engineering firms had to start from scratch in a subordinate role.

• **Foreign influence**—Enter the world picture. U. S. makers of power reactors and ancillary reactor components see worthwhile foreign markets developing in the immediate future. In preparation, to gain in know-how and prestige, they have been eager to assume leading roles in the U. S. program—so eager, that General Electric Co. reportedly stands to lose some $15 million on its lump-sum $45 million contract for the Dresden plant. It is also possible that the bigger manufacturers have assumed prime roles with an eye to modifying U. S. practice along the lines of European conventional power industry practice in which one maker contracts directly with an owner to furnish a complete facility. However, many major suppliers are reported to have expressed a desire to relinquish the prime contractor role.

While suppliers envisage world markets, by and large, the design-construction management firms see themselves priced out of the engineering service picture by lower pay scales abroad. So they have tended to build up engineering capability for nuclear power slowly, gearing their efforts to the advent of large-scale construction of nuclear plants in the U. S.

Another facet of the crazy-quilt picture derives from the present difficulty of accurately estimating costs of reactors. Owners are delighted to secure fixed-price contracts, such as are in effect at the Dresden plant. Thus, a turnkey type of business pattern is being encouraged.

• **British practice**—A less clearcut influence on American practice is the procedure being employed to execute Great Britain's big nuclear program. In the belief that no one firm had the skills, experience or capacity to contract for a complete nuclear power station, Britain's Atomic Energy Authority asked the four largest turbine and generator manufacturers each to form a group embracing at least a reactor maker and a design-construction firm. Four such groups have been formed, two incorporated and two on a joint venture basis. Each consortium has been awarded one of the four nuclear plants now under way.

• **What's ahead?**—Current practice notwithstanding, U. S. consulting engineer-construction management firms are unanimous in the belief that they gradually will assume their traditional role. That is, in the early future, the nuclear reactor will be considered merely a substitute for today's steam boiler. Then the engineer-constructor, as agent of the owner, will specify broad parameters for the reactor, just as he does for the boiler.

These firms believe that the same factors that established their position in the conventional power field will prevail in the nuclear business. Power utilities, it is held, will continue to place a high premium on careful, objective engineering which it has not been the manufacturer's business to supply. Consulting engineers also point to their increasing competence in nuclear technology which has resulted in several recent prime contractor roles.

Design-construction firms are less

Firms Going After the Business

These engineers and engineer-constructors recently submitted proposals to the Atomic Energy Commission to prepare the design of a 40,000 kw nuclear power plant.

Aerojet General Corp.
Anderson-Nichols & Co.
Bechtel Corp.
Black & Veatch
Blaw-Knox Co.
Burns & Roe, Inc.
Catalytic Construction Co.
Commonwealth Associates, Inc.
Day & Zimmerman, Inc.
Ebasco Services, Inc.
H. K. Ferguson Co.
Findley Engineering Co.
The Fluor Corp.
J. Fruchtbaum
Gibbs & Hill, Inc.
Gilbert Associates, Inc.
Frederic R. Harris, Inc.
Kaiser Engineers*
The Lummus Co.
Charles T. Main, Inc.
Norman Engineering Co.
Omega Engineering Co.
Parsons, Brickerhoff, Hall & Mcdonald
The Ralph M. Parsons Co.
Rust Engineering Co.
Sanderson & Porter
Sargent & Lundy
Stearns-Roger Mfg. Co.
Tampa Bay Engineering Co.
United Engineers and Constructors, Inc.
Vitro Engineering Co.

* Received award

positive over the outlook for lump-sum turnkey construction. Most of them are strongly opposed but agree they may be forced into it by the owners.

It is significant that the traditional view also is held by most of the nuclear engineering firms now breaking into the power business. Conventional power design specialists concede a share of the business to the newcomers.

U.S. manufacturers are doing little talking for the record, but two recent events may offer a clue. Under revised ground rules for construction of a group of nuclear plants in the AEC demonstration program, companies are to contract lump-sum with AEC for the nuclear portions, while owner utilities are to be responsible for conventional portions. Two of the projects recently fell through when equipment makers who had given AEC tentative prices boosted them suddenly. The projects were Rural Cooperatives Power Association's Elk River, Minn., plant involving American Machine & Foundry Co., and Wolverine Electric Cooperative's Hersey, Mich., project involving Foster Wheeler Corp.

Another sign of the times can be found in a recent call by AEC for design proposals for a 40,000 kw plant to be powered by a "Calder Hall" type reactor. AEC invited proposals from architect-engineer firms who have to include the name of subcontractor firms which would perform the nuclear reactor portion of the design work.

Of equal significance to this apparent recognition of consulting engineers by AEC was the fact that 31 firms submitted proposals. This large turnout, recapitulated in the accompanying table, is strong indication that consultants are not after the atom.

The signs seem to indicate, then, that the crazy-quilt nuclear power business will unravel as the engineer-constructors say it will.

But everyone recognizes that the owning utilities will call the tune and that they haven't composed the music yet. To be sure, they will be influenced by the desires of the engineers and manufacturers, but in the last analysis the utilities are in a buyers' market as far as building power plants is concerned.

Big Lift Span Job Hits Snag

Removal of at least part of main footing is ordered when tests indicate concrete does not meet specs

Workmen this week are busy removing at least the top 10 ft of recently placed concrete from the west pier footing of what is to be the world's longest lift span bridge.

The order to remove the concrete followed tests on cores that indicated that the concrete as placed has a variable compressive strength far below that called for in the specifications. One core tested broke at only 336 psi—even though preliminary tests on samples of the materials used withstood over 2,000 psi at 7 days, and a core of grout alone, taken from the top of the actual pour, withstood 4,750 psi.

The footing in question is a steel sheetpile-encased rectangle, seated 11 ft in rock, beneath 39 ft of water. It measures 62.5 ft wide, 68 ft long and is 24 ft thick.

The bridge, a 1,647 ft long structure to span the Arthur Kill between Elizabethport, N. J. and Howland Hook, Staten Island (New York City), is owned by the Staten Island Rapid Transit Railroad Co., a subsidiary of the Baltimore & Ohio Railroad. The two main piers are to support more than 5,000 tons of structural steel, including a 558 ft lift span.

• **Reasons and method**—With no overburden above the rock bottom of the Arthur Kill (a connecting waterway between Newark and Raritan Bays) in which to anchor the sheeting, and with a reversible current in the stream of 4 to 6 knots the river pier was recognized as a ticklish job from the start.

However, Charles F. Vachris Inc., of New York, the general contractor on the substructure, completed installation of the sheeting late in July. Parsons, Brinckerhoff, Hall & Macdonald, New York consulting engineers who designed but did not supervise construction, had called for a tremie operation.

The contractor suggested and received approval for a plan to install the footing by the Intrusion Prepakt method of first placing the stone, then pumping in grout to make up the concrete. Specifications were written requiring an extra 2 ft of rock, above the planned elevation for the top of the footing, in order to help maintain uniform dispersement of the stone during grouting operations.

Accordingly, 4,599 cu yd of 3 in. dolomite was delivered to the site by barge starting Aug. 1.

A cement strike in progress at the time prevented any concrete work from starting for almost two weeks after the stone was in place.

• **Grouting operations**—On Aug. 13, Intrusion Prepakt, Inc., of Cleveland, as a subcontractor began actual grouting operations. Pipes to carry grout to the lower sections were set, 10 ft on centers, before the stone was placed; pipes that would service upper areas were driven into the stone on 5 ft centers. Grouting operations were completed on Aug. 15.

During the course of operations, observers report, when the grout pipes became clogged (a common occurrence in pressure grouting) they were raised and cleared with water jets—or occasionally with compressed air.

• **Testing**—On Aug. 28, a subcontractor began efforts to remove a 6 in. dia. core from the northeast corner of the footing. No satisfactory recovery was made, and the initial failure was blamed on the whip of the drill shaft. But when the driller was also unable to get a suitable core from any other corner of the footing, it was decided to dewater, and take a 12 in. core. Suitable equipment for such a core was not available until Oct. 17, when new drilling started.

A 3.5 ft-deep core hole in the northwest corner of the footing produced 3 ft of core in two pieces—one 8 in. long, the other, 28 in. long. An additional 6.5 ft of drilling resulted in no core recovery.

The longer of the two pieces recovered was dressed and tested at the Haller Testing Laboratories, Plainfield, N. J. It fractured under a pressure of 336 psi. From another hole 52 in. deep, two cores—one 20 in. in length and the other 23 in. long—were recovered. An additional 68 in. of drilling recovered no core. The two cores broke at 2,031 psi and 2,075 psi.

• **Action**—Because 3,000 psi concrete is specified, a meeting was held at the job site on Nov. 13, attended by representatives of the contractor, Prepakt, the railroad and the Corps of Engineers.

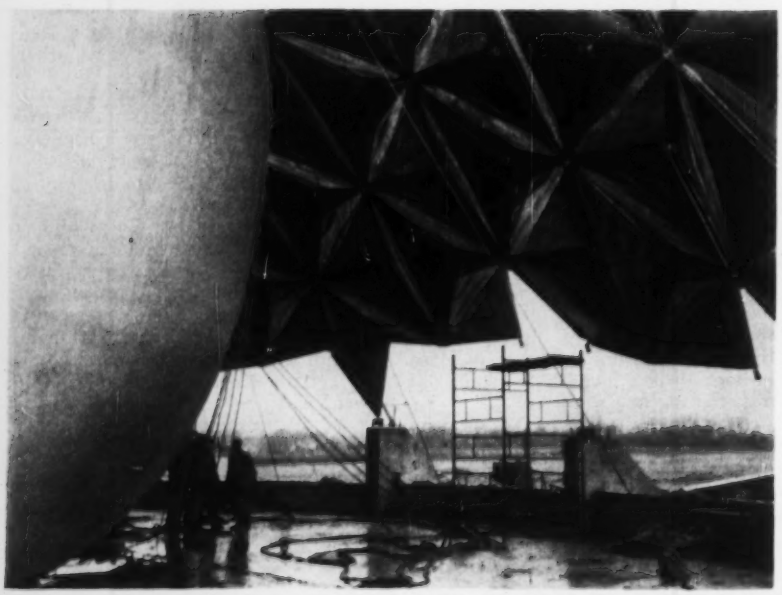
As a result of that meeting, the removal of at least the top 10 ft of the footing was ordered.

The position of the Corps of Engineers was made clear in a statement to ENR by Col. T. D. F. Rogers, district engineer: "Under the Truman-Hobbs act, the government has an agreement with the railroad to the effect that, if certain work is accomplished according to certain specifications, the government will pay for a share of the work done. At the moment the work in question has not been completed according to specifications. Therefore, the Corps cannot authorize full payment."

No other statements have been forthcoming from the railroad—which is supervising the construction—from Prepakt or from the Vachris organization, other than that investigations are continuing as to the cause and extent of the condition.

Balloons substitute for falsework as . . .

Aluminum Dome Factory Is Erected



INSIDE, the aluminum panels are insulated with glass fiber in a Freon gas atmosphere retained by a plastic film heat sealed at the panel edges.

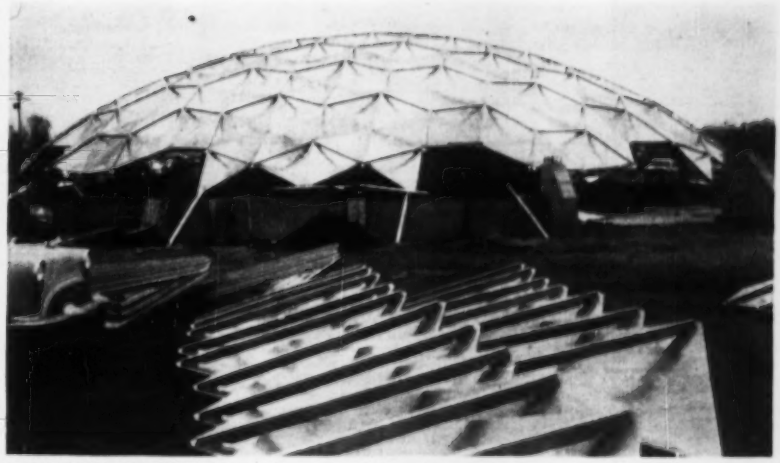
A 16,500 sq ft factory in Abilene, Kan., was enclosed in 22 working hours by an ingenious construction method. Aluminum panels were assembled atop balloons, which were inflated as erection progressed, to form a dome 145 ft in diameter and 49.5 ft high at the crown.

The factory is being built for the Fi Fo Conveyor Co. by the Fi Fo Construction Co. which was licensed by Kaiser Aluminum & Chemical Co. to fabricate and erect the domes.

Three similar domes had been built previously—for auditoriums (ENR Feb. 14, p. 26, and Aug. 15, p. 34). In those cases, a 96 ft high portable central mast raised and supported the dome as the panels were assembled.

Made of aluminum sheet a little more than $\frac{1}{8}$ in. thick, the panels are diamond shaped, curved inward and stiffened on the inside by an aluminum strut. On the inner face also is $\frac{3}{4}$ in. of glass-fiber insulation in an atmosphere of Freon gas and a plastic film heat sealed at the panel edges to retain the gas. To form the dome, 575 of these panels were bolted together at their edges.

Before dome erection began, the fac-



STARTING UPWARD as balloons are inflated, the aluminum-dome exterior of a factory at Abilene, Kan., grows out and up as diamond-shaped panels are added.

COMPLETED, the 145 ft dia dome rests on balloons until the weight can be transferred to concrete piers. Then, balloons will be deflated and removed.

in 22 Hours

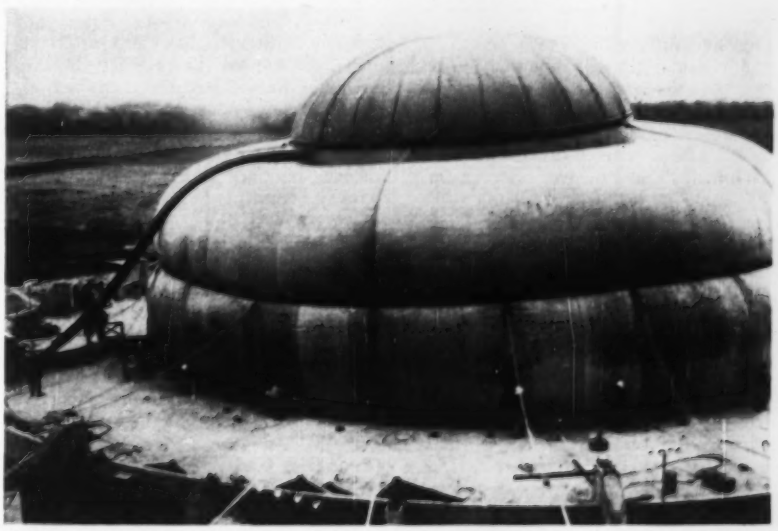
tory floor and 25 piers for supporting the dome were concreted. The concrete floor was used as a working platform.

At the start, the balloons, in deflated condition, were laid on it and fastened down. Two balloons were used, one atop the other, to distribute the load. The upper one was 50 ft in diameter and 24 ft high when inflated; the other was 95 ft in diameter and 34 ft high. Fabricated by Industrial Covers, Inc., they were made of nylon coated with du Pont's Hypalon, a synthetic rubber, to give them high abrasion resistance.

As panels were added and the dome grew in size, first the small balloon and then the larger one were gradually inflated with air from two 10-hp blowers.

With the dome weighing 45,000 lb, averaging 12 psf, and the balloons totaling 4,000 lb, or about 1 pfs, only 0.1 psi pressure had to be applied to support the assembly. When the dome was completed, it was pinned to the concrete piers.

The factory will be lighted by panels of high-output fluorescent lamps 23 ft above the floor. It will be heated by a forced warm-air system.



SUPPORT for the dome during construction consisted of a 50 ft dia balloon atop a 95 ft. one. Air pressure required was very low.

SLAB-LIKE TOWER is planned for Engineering Societies Headquarters.

Engineering Center Fund Raising Starts

With the start of the drive to raise funds for the United Engineering Center in New York City, some design information on the proposed $10 million project was released.

To be erected on a 37,000 sq ft site on United Nations Plaza, between 47th and 48th St., the building that will be the headquarters of 16 national engineering societies will be a long, narrow 20 story tower projecting above a broader 3-story base. It will provide 250,000 sq ft of floor area.

Included will be space in the base for the Engineering Societies library and exhibitions in which "rapid advances in engineering" will be interpreted for the general public.

Present plans call for construction to start in mid-1958. Occupancy is expected in the fall of 1960. Shreve, Lamb and Harmon Associates are the architects. Engineers for the planning stage have been Jaros, Baum and Bolles, mechanical; and Seelye, Stevenson, Value and Knecht, structural.

• **Where money will come from**—Announcement of the plans was made by Mervin J. Kelly, president, Bell Telephone Laboratories, who is chairman of the industrial campaign to raise funds for the center.

The industry campaign has a goal of $5 million. Members of the various engineering societies are expected to contribute $3 million. The $2 million balance of the $10 million needed is expected to come from assets of United Engineering Trustees, Inc., which owns and operates the present outgrown headquarters building at 33 W. 39th St., New York City.

Road Men See Progress

AASHO agrees U. S. road program is on schedule

Roadbuilding in the United States has had a successful year—both on and off the national interstate highway net.

This was the feeling as the American Association of State Highway Officials wound up its forty-third annual meeting in Chicago last week.

The nearly 1,000 state, federal and local engineers and officials attending the five day conference found their problems were similar and their objectives about the same: to build highways economically and at an accelerated pace, in the face of rising costs and continuing shortage of engineers.

Federal Highway Administrator Bertram D. Tallamy sounded the keynote of the convention at the opening general session, with a call for cooperation at all government levels.

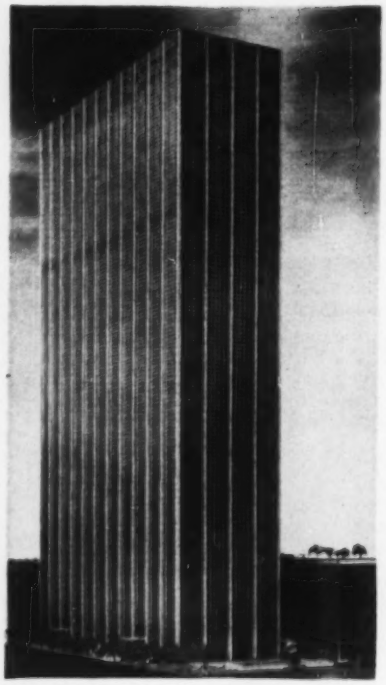
He told the highway engineers that some of them were not properly scheduling their construction consistent with their requests for federal approval. Further, he said that in some instances the state offices haven't taken time for enough review of project plans, before submitting them to the BPR for approval. Such plans contain too many errors, he said.

As to the progress of the national interstate highway program, Mr. Tallamy assured his listeners that both contract awards and construction were on schedule and that the trust fund with which the program is financed is solvent (ENR Nov. 21, p. 19).

U. S. congressmen on the program added significant points of interest in the discussion of our national highway program. Senator Albert S. Gore, chairman of the Senate's Committee on Roads, questioned the propriety of the Bureau of Public Roads' recent action in designating new additions to the national interstate highway system. In some instances, he said, these additional mileages had not been sought by the highway departments.

George H. Fallon, chairman of the House subcommittee on roads, promised that his committee would take a fresh look at highway needs, and seek to strengthen and improve the 1956 Highway Act, as necessary.

The new officers of the AASHO are: president, C. R. McMillan, chief highway engineer, South Carolina, succeeding W. A. Bugge, state highway engineer, Washington. The new vice president is R. R. Bartelsmyer, Illinois state highway engineer. Regional vice presidents are: J. N. Robertson, Washington, D. C.; M. L. Shadburn, Georgia; C. M. Noble, Ohio; H. D. Mills, Nevada.



Skyscraper Plans

Wraps taken off design of new Time-Life building

With the site excavation 95% completed and foundations begun, design features of the new 47 story Time and Life Building in New York City were made public last week.

The $70 million project is a joint undertaking of Time, Inc., (the major tenant) and Rockefeller Center, Inc. Located across the street from Radio City Music Hall, it will occupy the entire block front between 50th and 51st Streets on the west side of Avenue of the Americas.

The building will consist of a 557 ft high tower—set back from 50th St. and the Avenue of the Americas in order to provide a promenade and plaza—and a 7 story L-shaped base block, extending along the other two sides of the tower.

Vertical bands of limestone column facing will run the full height of the tower. They will be flanked by vertical aluminum box sections containing air-duct risers. Between will be glass spandrels and windows in aluminum framing.

The building was designed by Harrison & Abramovitz & Harris, New York City architects. Consulting engineers are Edwards & Hjorth, structural, and Syska & Hennessy, mechanical, both New York City firms. General construction is a joint venture of New York City contractors George A. Fuller Co. and John Lowry, Inc.

LOOK! A Dozen Erecting Problems . . . And H-5 Hydrocrane Solves Them All

PROBLEM	HYDROCRANE'S SOLUTION
1. Travel time between jobs	Up to 50 mph travel speeds
2. Frequent setups	Hydraulic outriggers that set in seconds
3. High lifts	Boom lengths to 70 feet (Optional with jib)
4. Close quarter work	Shortest tail swing in its class
5. Frequent boom angle changes	Working boom hoist
6. Lift heavy loads	New 10-ton capacity
7. Reach into buildings	Telescoping boom
8. Reduce damage	Hydraulic precision control
9. Inexperienced operator	Clearly marked hand levers — no foot brakes
10. Work on rough, irregular terrain	Hydraulic outriggers level automatically
11. Require fast line speeds	New selector valve doubles line speeds
12. Downtime	Simplicity of design cuts costly maintenance

Yes, the Hydrocrane is the only crane-excavator that does so many jobs so well. Mounted on a new or low-cost used truck, the 10-ton H-5 Hydrocrane is the erecting crane that returns more profit per dollar invested than any other machine in its class. Your Bucyrus-Erie distributor will be pleased to present the whole Hydrocrane story. 207H57

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Gulf Products and Fine Service keep equipment rolling on South Carolina Highway Project

D-8 Cats and 18-yard scoops filling and grading low spots on U.S. 76 near Columbia, South Carolina. Over 1,000,000 cubic yards of excavation will be required to complete the job. Blankenship Brothers, 100% Gulf customers from Charlotte, N.C., are the contractors.

On U.S. 76, near Columbia, work is underway on the first interstate highway project let in South Carolina under the Federal Highway Program. The project, four lanes wide and 9.357 miles long, will require over 1,000,000 cubic yards of unclassified excavation.

Banks Massey, Superintendent of Blankenship Brothers, contractors from Charlotte, North Carolina, says, "Bad weather has hurt us, but Gulf service has helped us make up lost time. We'll finish the project on schedule."

Gulf customers for many years, Blankenship Brothers know they can depend on reliable service and prompt delivery of the finest in petroleum products to keep their equipment on the move with less frequent down time. The Gulf Sales Engineer is always as close as their telephone. And their vital supplies of fuels and lubricants are delivered to the job from one of Gulf's 1500 strategically located warehouses.

Find out how Gulf can serve you, too. Your Gulf Sales Engineer is backed by 1300 scientists and technicians. He provides expert advice, at no cost, on problems involving the use of petroleum products. Call him at your nearest Gulf office, or mail the coupon today!

Left to right: C. E. Acree, Gulf Sales Representative, Columbia, S.C. District; M. L. Touchberry, Engineer, South Carolina Highway Department; Banks Massey, Superintendent, Blankenship Brothers, contractors.

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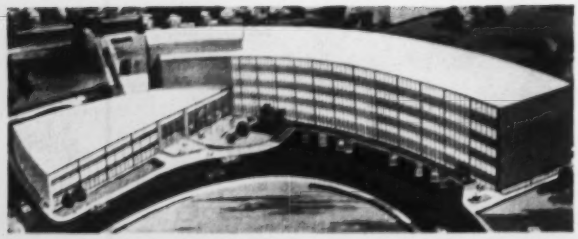


Panoramic Curved

In rapidly growing San Jose, Calif., a new city hall is going up. Built on a mat foundation, the building combines form and function to provide a structure with both maximum utility and graceful beauty.

CURVED ARC design of city hall at San Jose, Calif., gives it eye-catching prominence. Council wing and upper tier utility housing break monotony of a single form. Steel mullions extend from ground to roof to support windows.

REINFORCED CONCRETE was used throughout the building. Flat-slab floors with drop panels above columns make up structural style.

RADIANT TYPE HEATING and cooling system, giving quick response to needs, is in-

City Hall Designed As an Eye-Catcher

The new city hall for San Jose, Calif., is being built along the arc of a circular curve. The design was chosen not only for appearance but also for advantages in layout.

All-weather comfort inside is assured by a panel heating and cooling system with flexible automatic controls.

• **Flat-slab design**—The building is a four-story reinforced concrete structure with an additional two-story wing including a dining hall and council chamber. A two-way flat slab, reinforced and 10 in. thick, is supported on three rows of columns. One advantage of this type of floor was unobstructed runs for the elaborate air-conditioning network of ducts and piping. The floor is cantilevered a distance of 11 ft beyond the first row of columns to provide a public corridor along a curved side.

The rows of columns are 22½ ft apart, with 20 ft intervals along the interior curve and 25 ft spacing along the exterior curve.

To provide longitudinal rigidity against seismic loads, one row of columns was designed with wider members, the larger dimension extending parallel to the curve.

Lateral shear walls—four spaced evenly along the building—give rigidity in the other direction.

A steel frame roof tops the council chamber. A cellular steel deck covers the frame to act as a diaphragm in resisting earthquake forces.

• **On mat foundation**—Soil and foundation studies made by Woodward-Clyde & Associates of Oakland, Calif., indicated the strong possibility of differential settlement in a clay-type soil, if conventional spread footings were used. As a consequence a concrete mat foundation was decided on to assure even settlement. That the decision was correct has been proved by the 2 in. of even settlement already measured.

The foundation mat was designed as a three-ft slab, with two-way reinforcing steel at both top and bottom. The mat was cast in one pour totaling 3,400 cu yd of concrete. The casting, which took 29 hours, was supplied with truck-mixed concrete from three plants and delivered by 15 cu yd trucks. Peak rate was 170 cu yd per hour.

A total of 75 tons of structural steel was used in the building. Some 1,000 tons of reinforcing rods were placed in conjunction with the 10,000 cu yd of structural concrete placed. A 6 sack per cu yd mix, with 1½ in. aggregate, was used for the foundation and shear walls; a 6½ sack mix with ¾ in. aggregate was used for the floor slabs. Both mixes were designed for a 28 day strength of 3,250 psi.

• **Heating, cooling**—The heating and cooling system for the building has the advantages over conventional air conditioning of rapid response to changing conditions and maximum flexibility in meeting tenant requirements. A pneumatic-type automatic control system with independent thermostats to control each zone, as dictated both by interior and exterior loads, is used.

Ducted air for ventilation is blown through the ceiling plenum to assure circulation up to four air changes per hour in working spaces. But the air is not the temperature regulator; this is the task of cooled or heated ceiling panels. Water is circulated through a ½ in. piping network in contact with perforated aluminum acoustical ceiling panels to control temperatures in the spaces below.

A centrifugal type, 250 hp chilling unit and a 50 hp reciprocating chilling unit with a total capacity of 300 tons of refrigeration handle the cooling needs. Two gas-fired hot-water boilers provide heat to the system.

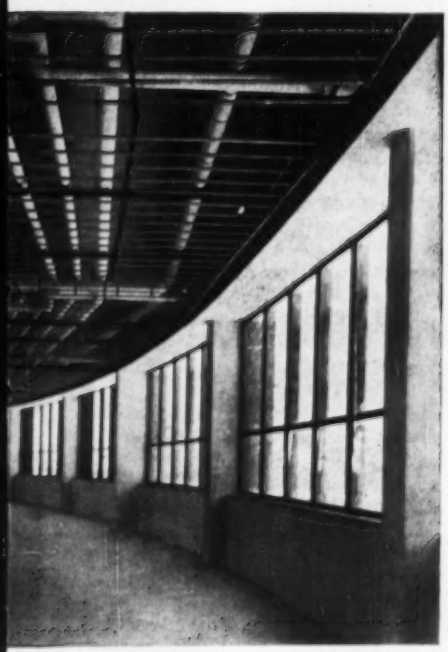
The building is enclosed on its curved sides with porcelain-enameled steel panels and glass, mounted between steel mullions, that extend from ground to roof. A heat-resistant glass is being used on the sunny side. All windows are the inoperable type.

Since the corridor along the inner curve faces south, it tends to insulate the adjoining office spaces, in addition to assuring soft lighting.

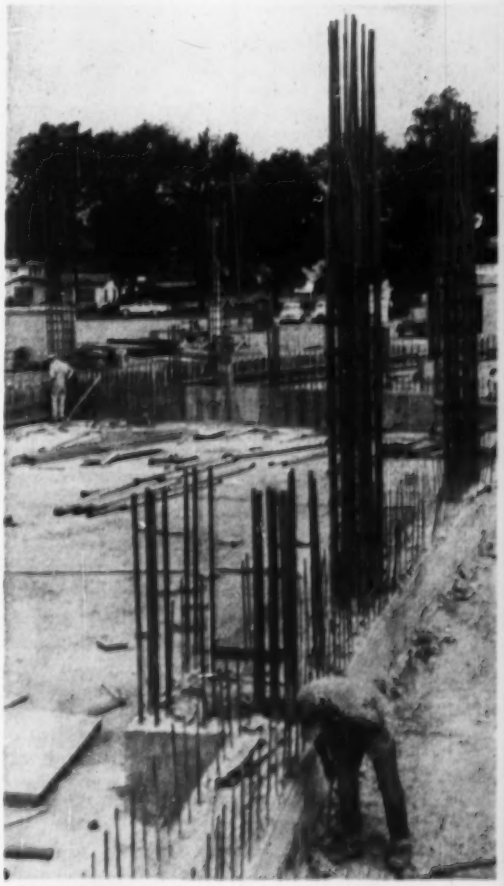
• **Flexible layout**—Because San Jose is a rapidly growing city, providing for flexibility in use of office spaces proved an important consideration. Therefore movable metal partitions will subdivide much of the interior.

The total cost of the city hall is $2.5 million with the greater part being financed through a local bond issue of $1,950,000. The cost averages $18.60 per sq ft. C. N. Swenson of San Jose was awarded the contract on a basic bid of $2,218,000. Construction began in July, 1956, with completion scheduled for February, 1958.

Donald F. Haines of San Jose and San Francisco is the architect; Gould & Degenkolb of San Francisco is the structural engineering firm.



stalled throughout building. Ducted air is circulated through plenum for ventilation.



MAT FOUNDATION bearing on clay soils was used to avoid differential settlement.

Where Does Groundwater Come From?

Editor's Note: *Since the publication of an article in Engineering News-Record, June 20, 1957, p. 46, concerning a peculiar water problem encountered in the construction of an addition to Harlem Hospital on New York's upper east side, the structure has been closed in and is now practically completed.*

The source of a stream that at one time ran at the rate of several million gallons per day at temperatures up to 68 deg. F. has never been discovered. The building was built in such a manner as to counterbalance any hydrostatic pressure from the stream, and the water itself was diverted and blocked off.

It is surprising that despite efforts of many agencies, the source of the flow has apparently never been determined, and more surprising that there has been no comment to this journal on possible reasons for the flow and its origin.

The first such comment is included in the following material, submitted as part of a letter by Michael H. Salzman, vice-president of the Resources Foundation of America. This organization, a California corporation, was, according to its founding papers, formed for "The specific and primary purpose of researching, experimenting with, studying and developing theories, postulates and formulas for the discovery and development of sources of primary water in the North American Continent and to disseminate the knowledge acquired thereby."

Michael H. Salzman
Vice President
Resources Foundation of America

"If there were no additions to the atmospheric and the terrestrial water supply, fixation of water by weathering would ultimately exhaust the earth's water supply. Fortunately, water is constantly being added." That is a quotation from C. F. Tolman's book "Ground Water", published by McGraw-Hill in 1937.

This addition of new water to the supply of the earth can be called "juvenile water", and is further classified according to origin. Groundwater hydrologists have paid little attention to methods for location of "juvenile water" even though many of the foremost groundwater hydrologists support the theory.

Oscar E. Meinzer, author of the book "Hydrology", published by McGraw-Hill in 1942, believes that the theories of juvenile water supplement rather than conflict with the infiltration theory, which postulates that the groundwater is derived chiefly from rain or melted snow, or from streams and lakes that are themselves supplied by rain and snow.

The first of the juvenile waters to be identified is **magmatic water.** Magma is molten rock, which occurs at depth, and consists of a mutual solution of melted rock-forming minerals and gases, the most important of which is water vapor.

The fact that magmatic water is given up upon crystallization of magma is shown by the minerals formed at and near the contact of igneous rocks and intruded rocks, and especially by those that replace the intruded rock and penetrate it in veins. Some of these minerals could have been transported only in solution in water vapor and in liquid water. Water thus driven out of magma during its crystallization is called magmatic water.

A second juvenile water is found in volcanos. In the Hawaiian Islands, volcanic water has been collected, by means of tubes into the molten lava, and analyzed. It contains no argon, which occurs in all atmospheric water, hence it may be concluded that this is new water, not derived from atmospheric or surface water which has seeped into the ground. It has further been shown that throughout molten lava, oxygen and hydrogen are uniting to form water, and that this chemical reaction is an important source of volcanic heat.

According to Arthur L. Day and E. S. Shepherd, in their article "Water and Volcanic Activity", in the Annual Report of The Smithsonian Institution in 1913:

"The free hydrogen set free by the volcano reacts with sulphur dioxide at 1,000 F to give water and free sulphur directly. Neither CO, nor SO, can be associated with free hydrogen at temperatures in the vicinity of 1,000 F without the formation of water."

Matamorphic water is a third type—a rejuvenated water. Weathering causes water to combine with the minerals of rocks to form new minerals, and thus be abstracted from the water supply of the earth. This water is returned only in part by the reversal of the process which involves dehydration and driving out of water fixed in minerals by weathering.

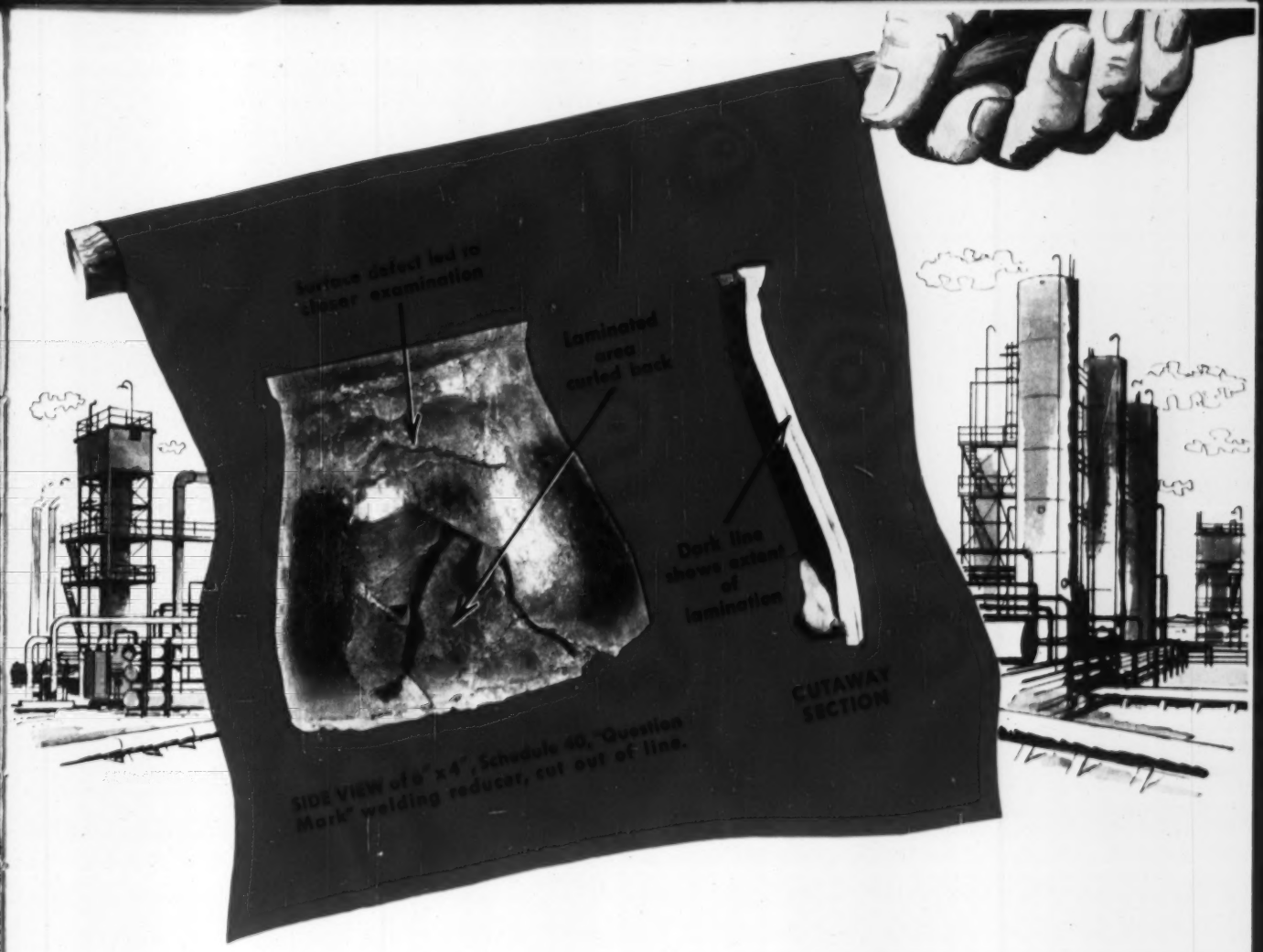
Edward Suess, some of whose work was translated in Engineering & Mining Journal in its issue of July 11, 1903, was a special exponent of the theory of juvenile water. The question of groundwater is closely related to that of the genesis of metalliferous deposits. Thus, students of ore deposits proceeded from various vague theories to a clear understanding of the important function of circulating groundwater, and later to a belief also in the importance of magmatic separation.

"Igneous rocks give evidence of the production of water of internal origin from structural features that record events of the past, whereas volcanoes and hot springs give evidence from processes that are now in progress. Many of the crystals of igneous rocks, especially quartz crystals, contain minute hermetically sealed cavities containing water that was presumably present in the magma from which the crystals were formed.

"Quartz is known to be one of the last minerals to crystallize out of a magma, and water appears to be a residual product of the slow solidification of the magma. Hence the quartz crystals are likely to be formed in the presence of water, and it is not surprising that they should be especially rich in included water. Fossil evidence of another kind is afforded by the structure of some intrusive granitic rocks that are intimately related to and grade into quartz veins deposited by water," according to another chapter in Mr. Meinzer's 1942 book.

"The best general evidence of the existence of juvenile waters is furnished," says Waldemar Lindgren, "not by observation of the present springs, but by study of old intrusive regions. Here, the granites merge into pegmatite dikes, the latter changes into pegmatite quartz, and this into veins carrying quartz and metallic ores. Here we have evidence difficult to controvert, that dikes consolidated from magmas gradually turn into deposits the structure and minerals of which testify to purely aqueous deposition. This admitted, it is difficult to see what would prevent such waters from reaching the surface."

According to a study completed by Mr. Meinzer in 1927 for the U. S. Geological Survey, there are in the United States 65 springs of the first magnitude (an average daily discharge of not less than 65 million gal). Of these springs, 38 rise in volcanic rock or in gravel associated with volcanic rock, 24 in limestone, and 3 in sandstone.


Surface defect led to closer examination
Laminated area curled back
Dark line shows extent of lamination
CUTAWAY SECTION
SIDE VIEW of 6" x 4", Schedule 40, "Question Mark" welding reducer, cut out of line.

Watch out for the after-costs of Question Mark fittings!

Unknown fittings may look like a bargain on the price tag, but watch out for the consequences!

Surface defects led to the above "Question Mark" fitting being cut from the piping. Further examination showed the steel inside was laminated. Pieces cut out literally fell apart. Here was an open invitation to serious trouble . . . lost production, wasted dollars and possible human casualties.

This is another example of a dangerous situation posed by unknown fittings of questionable quality . . . a serious threat to the safety and economy of well-engineered piping.

You can avoid these risks by specifying KNOWN fittings!

DANGER! *Your first warning of Question Mark fittings is their lack of complete, permanent identification of manufacturer, wall thickness, weight, material . . . as required by A.S.A. code.*

A message in the interests of top quality piping
. . . by Tube Turns, Louisville, Kentucky

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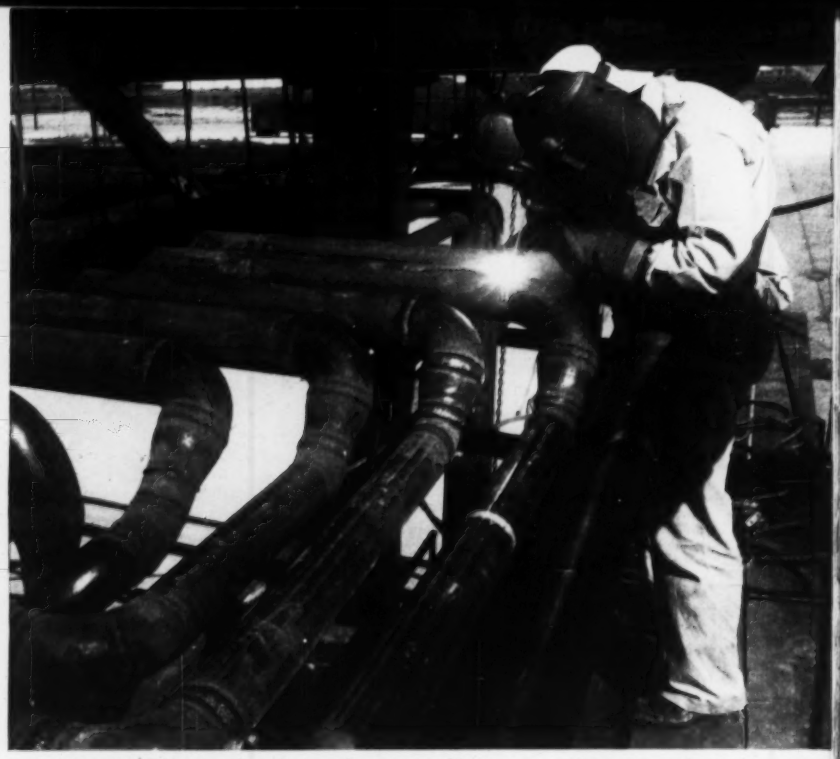
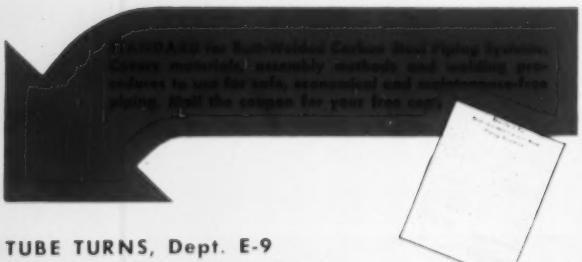


TOP QUALITY! *Directional and size changes in this process piping are made with* TUBE-TURN *Welding Elbows and Reducers . . . recognized for their unsurpassed uniformity and quality.*

The cost of fittings is a small fraction of the total cost of a piping system. To buy "cheap" fittings and run the risk of impairing the performance of your entire system can, therefore, be "penny wise and pound foolish."

When you specify and buy TUBE-TURN* products, you know your investment is safeguarded by unsurpassed quality of fittings and flanges. They meet all American Standard and Safety Code requirements. Each product is permanently marked with complete size and material designation.

COMPLETE LINE! *Your nearby Tube Turns' Distributor gives you prompt delivery from the complete line of more than 12,000 Tube Turns' stocked items. Photo courtesy The Ross-Willoughby Co., Columbus, Ohio.*



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Additionally, a report by N. D. Stears, H. T. Stearns and G. A. Waring in 1937, for the USGS, lists 1,056 thermal springs or spring localities in the United States. Of these, 52 are in the East-Central region, 3 in the Great Plains region, and the rest in the Western Mountain region.

Springs may be divided into (1) springs due to gravitative pressure transmitted through a continuous body of ground water, and (2) springs of deep origin flowing as the result of agencies other than gravity, largely the expulsion of water during the crystallization of igneous rocks. According to Kirk Bryan, whose paper on Classification of Springs appeared in the Journal of Geology in 1919, these springs may be further subdivided into (a) springs associated with volcanism or volcanic rock, and (b) springs due to faults or fissures extending deep into the earth.

The great discharge of the first magnitude springs is believed to be due to faults or to other special features. Nearly two-thirds of the recognized thermal springs issue from igneous rocks —chiefly from large intrusive masses which still retain some of their original heat. Many of the thermal springs issue along faults.

A fault is a structural feature consisting of a fracture and a dislocation of the rocks on one side of the fracture with reference to those on the other. Faults also are of two kinds, normal and thrust. They differ greatly in their lateral extent, in the depth to which they reach, and in the amount of displacement.

In some places, instead of a single sharply defined fault, there is a fault zone in which there are numerous small parallel faults or masses of broken rock called fault breccia which may afford good water passages.

Although some faults act as dams for groundwater, others are important containers and conduits for groundwater. The opposite sides of many faults, especially normal faults in hard rock, are not everywhere pressed together, but form fissures through which water may flow.

Perhaps the most important function of faults in relation to ground water is that of conduits leading from deep sources of water up to the surface. Openings of no other kind probably extend so far below the surface, and no other structural features are so effective in allowing the ascent of deep-seated waters. Many springs owe their existence to the damming effects of faults, but many others are the outlets of waterways that follow the faults. Many of the springs of the latter type have a large and relatively uniform discharge, and many yield water of high temperature, doubtless because it comes from great depths where the earth is hot.

Excellent examples of springs produced by the rise of deep waters through fault openings are to be found along the edges of the mountain ranges of Nevada and Western Utah. The abundance of these springs and the copious flow of some of them are more impressive because of the aridity of the region in which they occur. The ranges of this region consist largely of tilted fault blocks, and in many places there are recent fault scraps in the alluvial slopes at the foot of the mountains. That many of the springs along these fault lines are not merely returning to the surface water that percolates into sediments of the adjacent alluvial slopes, but yield water that ascends from deep sources among the faults seems to be shown by the following facts:

1. The springs are situated along the general courses of the fault scarps, some of the groups having a more or less linear arrangement;

2. The yield of many of the springs is larger than would be expected if they were supplied from local sources, and some, with the largest yields, occur along narrow dry ranges that supply but little water.

3. They have relatively uniform flow throughout the year, whereas ordinary springs in the region fluctuate with the season;

4. Many of these springs yield water whose temperature is above the mean annual temperature of the region, and hot springs that are not associated with volcanic rock are abundant;

5. Many of the springs issue from deep pools that are believed to be associated with fissures.

Some of these springs are described in USGS Water Supply Papers 277, 365, 423 and 467.

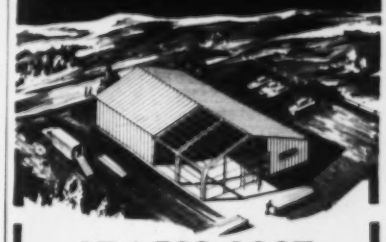
California Utilities Sponsor Water Desalting Research

Seven California power generating agencies met recently to map out a joint research and development project to investigate practical economical methods of converting saline water to fresh water.

In a conference with representatives of the U. S. Department of Interior, the utilities discussed the possibility of using partly spent, low temperature steam from steam electric power generating stations for the distillation.

Participating utilities included Southern California Edison, Pacific Gas & Electric, California Electric Power Co., Los Angeles Department of Water and Power, Pasadena Municipal Light and Power Department, and the public service departments of Glendale and Burbank.

BUILD



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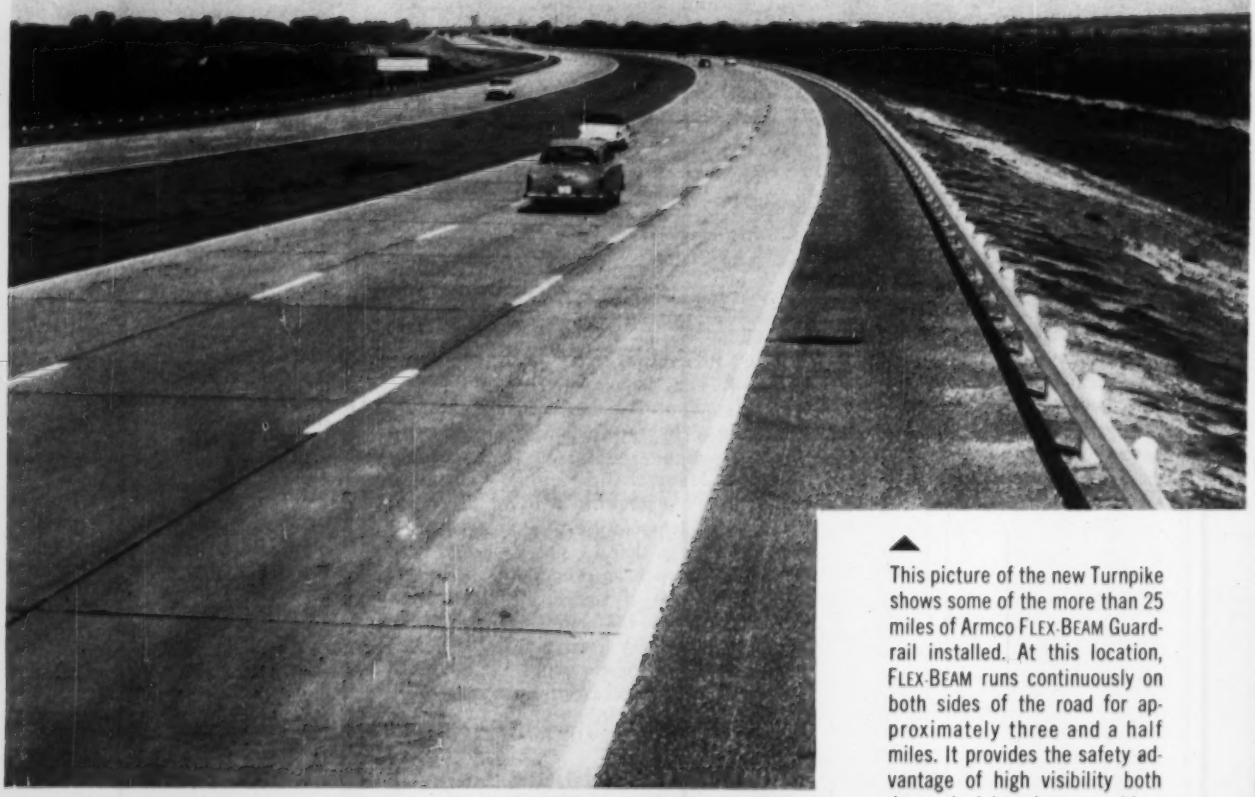
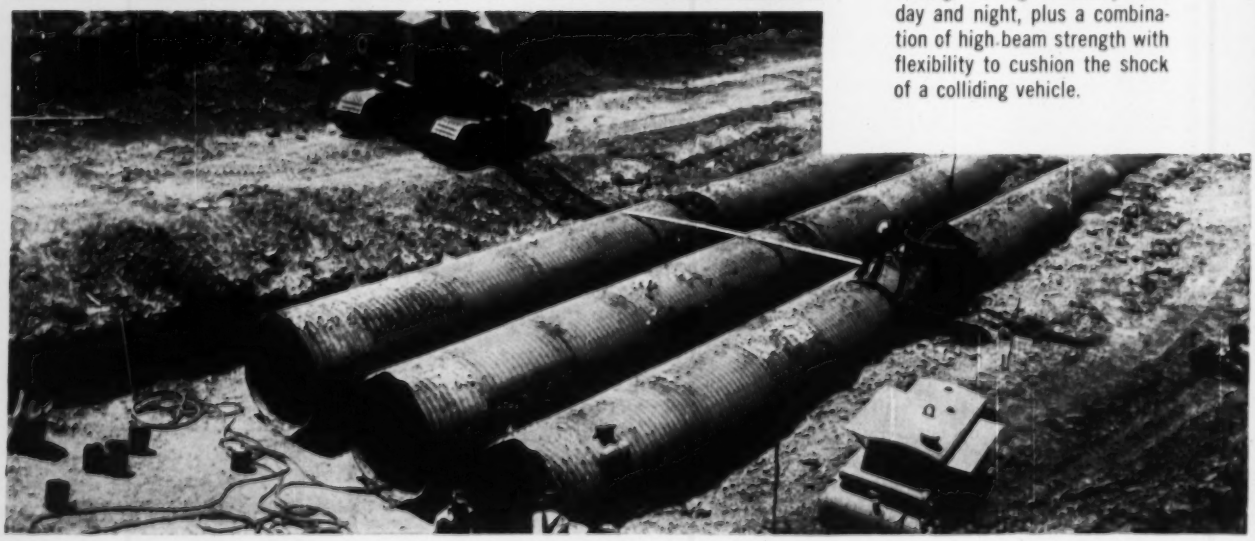


▲ This picture of the new Turnpike shows some of the more than 25 miles of Armco FLEX-BEAM Guardrail installed. At this location, FLEX-BEAM runs continuously on both sides of the road for approximately three and a half miles. It provides the safety advantage of high visibility both day and night, plus a combination of high beam strength with flexibility to cushion the shock of a colliding vehicle.



CONSTRUCTION PRODUCTS new Dallas-Fort Worth Turnpike

The just-completed Dallas to Fort Worth Turnpike forms a strong, safe, thirty-mile link between two of the Southwest's major cities. The road is short as turnpikes go, but long on special design and construction problems. There were many fill sections of the 40- and 50-foot variety, 57 bridges and grade separations, 146 culverts and drainage structures.

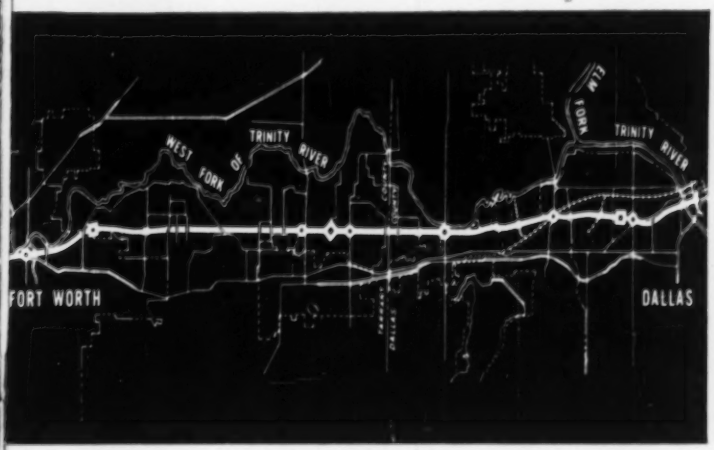
Maximum grade of the roadway is 3 per cent; maximum horizontal curve, 2 degrees.

In solving many of these problems, seven Armco Drainage and Construction Products carried a big share of the burden. More than 16,000 feet of Armco Corrugated Metal Pipe and (under the higher fills) MULTI-PLATE® Pipe were installed. Doing other important jobs on the Turnpike are Armco Perforated Pipe for subdrainage, Armco Water Control Gates, Armco Steel Pipe Piling for economical foundations, and Armco End Sections for efficient, good-looking end-finish on culverts.

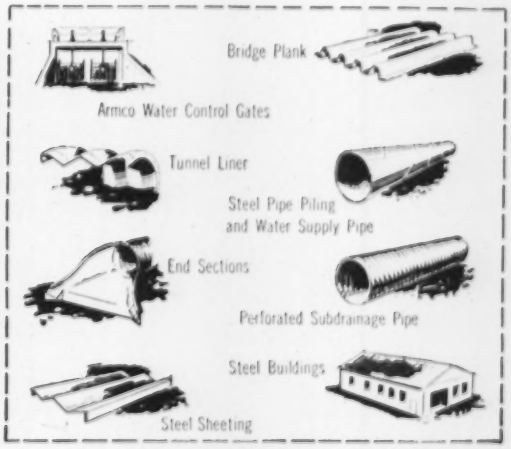
One of the special safety features is the design of three lanes for each direction of traffic, plus a paved refuge shoulder. Each roadway is made up of a 13-foot center lane, bounded by two 12-foot outside lanes. This provides extra space for maneuvering where it is needed. Add the proved safety factor of more than 25 miles of FLEX-BEAM® Guardrail and the result is fast, comfortable, safe driving.

For details about these, and other Armco Construction Products, write us, outlining your needs. Armco Drainage & Metal Products, Inc., 5887 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation., In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

General Consultants: Howard, Needles, Tammen & Bergendoff, Kansas City.
Section Engineers: Turnpike Engineers, Arlington, Texas
An Association of Freese & Nichols, Fort Worth;
Joe J. Rady, Fort Worth; Forrest & Cotton, Dallas;
Powell & Powell, Dallas
Mitchell & Hunt, Dallas and San Antonio
J. C. Dingwall, Engineer-Manager, Texas Turnpike Authority



LEFT—An old river channel crossed by the route of the Turnpike is enclosed with a battery of three 72-inch Armco MULTI-PLATE Pipes. Fill height here was 40 feet. The ability of Armco Structures to carry the load of high fills has been demonstrated time after time.



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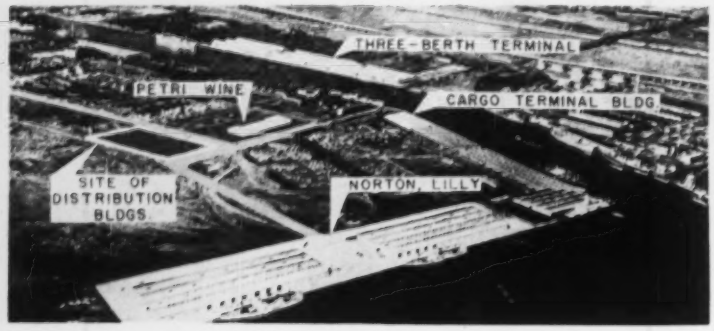
ARMCO CONSTRUCTION PRODUCTS

Facelifting Port Newark to Keep Pace With



What They're Doing . . .

Here at Port Newark, the bi-state Port of New York Authority is spending more than $23 million in a program to modernize a vital segment of the biggest port in the World

Nearing completion on 24 acres in the southeast end of Port Newark, N. J., is Norton-Lilly Co.'s four-berth marine terminal. Being built by the Port of New York Authority at a cost of $10 million, the facility is part of an overall program that calls for an expenditure of more than $23 million to modernize this important portion of the bi-state Port of New York.

Other facilities now under construction at an estimated cost of $13.3 million include a three-berth terminal, a cargo building, a bulk wine terminal, and four cargo distribution buildings.

The port is located on Newark Bay in the New York-New Jersey Port District, about nine miles from the Narrows (entrance to New York's upper bay) by way of Kill Van Kull. It is adjacent to the New Jersey Turnpike and Newark Airport, in the center of New Jersey industry, and approximately 25 minutes by truck from midtown New York City (ENR June 6, p. 66).

FOUR BERTH TERMINAL will include a 2,400 ft long, 50 ft wide wharf, two transit structures, a two-story air-conditioned administration building, a stevedore's garage and a 400 car parking lot. This project will cost $10 million.

Competition

Within this port area, 612 acres of land provide the site for the existing 26 deep-water berths, 10 cargo terminal buildings, 6 public warehouses, a 15 acre lumber terminal and numerous buildings for distribution. A 7,000 ft long, 685 wide channel—35 ft deep—serves the port, which also is served by three major railroads as well as lighterage.

• **Four berth terminal**—The terminal being built for Norton-Lilly will include a 2,400 ft long wharf, two transit structures (each 880 ft long and 200 ft wide), an 8,000 sq ft, two-story, air conditioned administration building and a $198,000 stevedore's garage.

The two pile-supported, aluminum-clad transit sheds, with structural steel framing, will provide 352,000 sq ft of covered cargo space, plus office areas.

Major feature of the job is construction of the wharf itself, built as an earth-filled "sandwich" of prestressed, precast concrete slabs. Foundation piles for the 50 ft wide wharf section are precast, prestressed, 24 in. dia hollow concrete piles. The underwater space between the piles and under the wharf itself is filled with rip-rap.

After the lines of piles were capped—practically at water level—precast, prestressed concrete slabs were laid over the pile caps to form the wharf bottom. Fill material is then placed for the full length of the wharf area to carry a roadbed that will support two sets of railroad track with cross-over connections. The railroad will enter the wharf between the two buildings.

In order to speed up the work, Stock Construction Corp., New York City, general contractor, put in half of the piles with floating equipment instead of waiting until the entire area could be filled in. To wait for the earth fill could have meant a long delay. Scrapers and carry-alls now are entering the building at one end, dropping the fill material inside and exiting at the opposite end. Dozers are used to push the material into place. After the fill is completed, the area will be rolled and compacted as required. The fill is separated from the rip-rap by a line of greenheart sheathing, selected because steel was not obtainable, and because it was found that steel sheeting would have required cathodic protection.

On the fill, crushed stone will be laid, rolled, and followed by a binder and stone chips—very similar to road construction methods. The asphaltic-concrete topped floor area is designed to support 500 psf. Another feature of the project is the inclusion of a "burtoning system" of cargo handling, which is supported by the columns on the east side of the building. (The 75 ft high burtoning posts can be utilized to load and unload ships at the wharf without using ship's gear, though a series of slings and sheaves that use the posts as fixed derricks.)

A LINE OF GREENHEART SHEATHING separates the sand fill under the building from the rip-rap fill under the 50 ft wide fire-proof wharf.

Each building will have 14 cargo doors along the front, each 18 ft wide and 17 ft high. Along the rear there will be 12 doors, each 18 ft wide and 14 ft high. The entire 1,760 ft length of the buildings on the land side will be provided with a depressed truck loading area served by a platform 16 ft wide capable of spotting 140 trucks at one time.

The structures are fireproof, but a sprinkler system will be included. About 300,000 sq ft of open area will be available at the rear of the two buildings.

• **Three berth facility**—The $6.1 million 3 berth facility is located on the north side of the channel. Of the total cost, a contract for $1.4-million covering construction of three aluminum-clad cargo terminal buildings, was awarded to Joseph L. Muscarelle, Inc., Maywood, N. J. For a bid price of $568,000 the Franklin Contracting Co., Newark, received a contract for paving the open area and for the related utilities for the three cargo sheds.

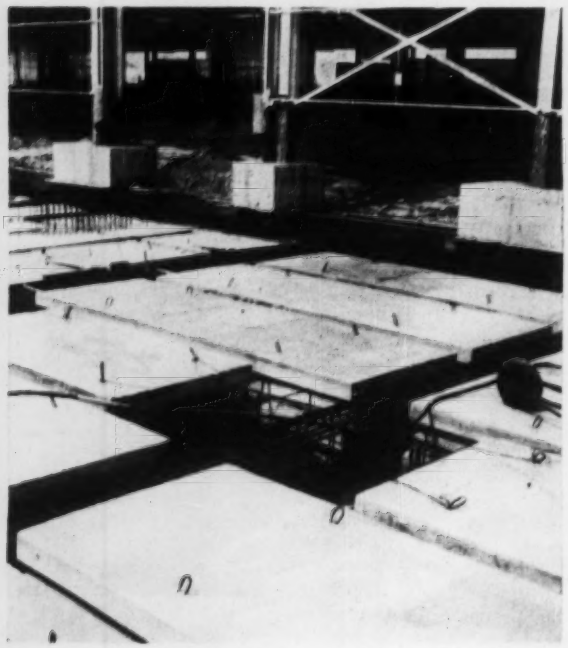
Each of these buildings will have a gross area of 91,000 sq ft and will be 520 ft long and 175 ft wide. There will be eight doors 20 ft wide and 18 ft high in front and eight doors 20 ft wide and 14 ft high in the rear, with a 20 ft wide truck rail platform and double sets of railroad tracks in the front and rear, with crossovers. The floor design load of each structure will be 500 psf.

The cargo terminal buildings will be served by a 56 ft wide wharf extending for 1,860 ft along the Port Newark Channel. This will provide three deep-sea ship berths, each 620 ft long. It involves complete reconstruction of an existing facility.

The original wharf was high, and many of the wooden piles were badly rotted. The piles were cut down to near the water level, bad ones removed and replaced. The new wharf will consist of precast concrete slabs that are placed over the pile foundation.

In the middle section, a high rock

. . . Facelifting for Port Newark



PRE-CAST, PRESTRESSED concrete slabs that form the wharf bottom are keyed together with reinforced concrete, cast-in-place.

EARTHMOVING MACHINES bring in fill materials as dozers push it into place. Finished floor will be of asphaltic concrete.

condition exists, making it necessary to pin the 40 ft piles to the rock along the gravity wall on the water side. Due to the extraordinary situation, all the existing piles in this section were pulled out and the muck was excavated from the channel bottom alongside the gravity wall line.

Precast, prestressed concrete piles will be put in this wharf section and the gravity wall will be built on top. The wharf construction is being done by Charles S. Vachris of Brooklyn at a cost of $1.2 million. At the rear of this terminal facility a paved and lighted area of about 240,000 sq ft will be provided.

• **Cargo terminal**—The aluminum cargo building on the south side of the channel will have a gross area of about 88,000 sq ft and will be 440 ft long and 200 ft wide. There will be five doors 20 ft wide and 18 ft high in front, and five doors 20 ft wide and 14 ft high in the rear. This building also will be capable of carrying a floor load of 500 psf and will have a truck loading platform along the entire length of the rear of the building. Two sets of railroad tracks equipped with crossovers will be provided in front and rear.

• **Wine terminal**—The first Port of New York waterfront bulk wine terminal with direct pipeline service from tankers will be built by PNYA at a cost of $1.2 million to be leased to United Vintners, Inc., San Francisco.

The terminal, being built on the south side of the channel, west of the Norton-Lilly berths, will be served by four pipelines elevated on supports high enough to clear all wharf and street traffic. The four lines (for handling four types of wine simultaneously) will be installed at angles to permit gravity draining. They will extend from Berth 14 on the south side of Newark Channel, 800 ft to the north side of the new building. The tenants expect to invest more than $750,000 in required equipment, including pipelines, stainless steel tanks and bottling machinery.

The company now ships some 14 million gallons, or 60,000 tons, of bulk wine a year by rail from the West Coast to the Atlantic coastal area. Its transfer of handling facilities to the waterfront will enable it to take advantage of low cost water transportation.

The wine terminal will include a sprinklered and heated building 440 ft long and 150 ft wide. A 175 ft truck platform will service the structure on one side and an 80 ft rail loading platform on the opposite side. Some 12,000 sq ft of paved and lighted vehicular parking area will be provided. The 66,000 sq ft of ground level space will comprise 15,000 sq ft to house the storage tanks, 18,000 sq ft for the bottling operation and 33,000 sq ft for general storage. The building also will have 6,000 sq ft of modern office area on the mezzanine floor.

The wine terminal was designed by Frederick C. Lowy, consulting engineer, and the contractor is Zephyr Construction Co., both of New York City.

• **Cargo distribution**—On a site 1,000 ft by 800 ft—on the southern fringe of the port—four new cargo distribution buildings to cost about $4.4 million will be built. The 1 story buildings, with a total area of 412,160 sq ft, are being built in advance of actual leasing to meet demand for distribution space. Completion is expected in 1958.

The four structures, with ample truck back-up area, railroad connections and easy access to the waterfront, will be a valuable addition to shipping facilities. Each building will be 640 ft long and 160 ft wide, divided into four sections. They will be built at truck-bed height, with truck back-up space on one side and railroad siding on the other. All door openings will have protective canopies.

Other features of the new buildings will be a clear interior height of 18 ft, and asphaltic concrete floors capable of supporting a 500 psf floor load. A total of approximately 160,000 sq ft of paved truck back-up area will be provided in addition to 68,600 sq ft of paved open area at the ends of the buildings for open storage or parking.

Under a special contract, American Dewatering Corp., New York City, is consolidating the ground in preparation for foundation work, using wellpoints in addition to vacum pumping.

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. . . Facelifting for Port Newark

SPREADING AND ROLLING of crushed stone to prepare floor for asphalt covering is shown for the wine terminal. The floor will be capable of supporting 600 psf.

THREE BERTH WHARF'S gravity wall will be built on precast, prestressed concrete piles.

The vast area upon which the four new distribution buildings are to be erected was at one time a salt marsh. The section now consists of meadow mat—a 15 ft layer of organic silt and peat over a sand layer. On top of all this is a layer of hydraulic fill, perhaps five to six years old.

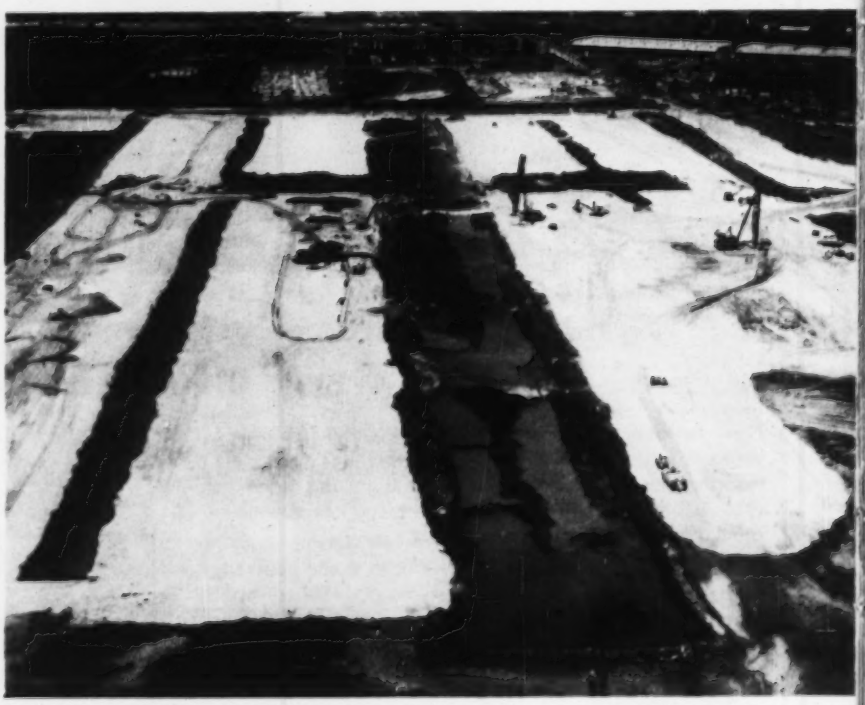
The plan is to lower the water table with wellpoints so that the now buoyant sand becomes dry—thus its effective weight would be greater and it would act upon the affected area as a surcharge. The purpose is to stabilize and consolidate the ground in a 2,000 x 1,000 ft plot.

The stabilization of extra-fine-grained soils requires a vacuum method, because water would ordinarily be retained by capillary forces in the voids of the soil (in grains smaller than 0.05 mm.).

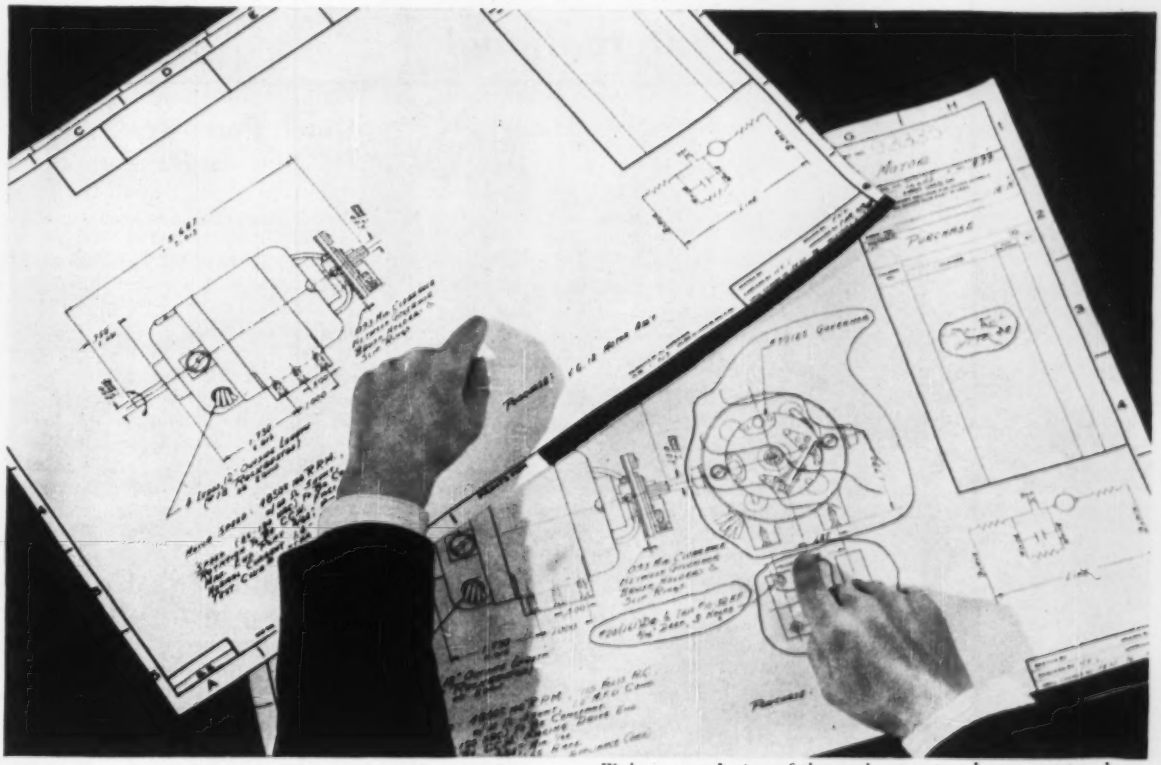
A vacuum pump is attached to the header pipe and pumping produces a vacuum at the filters. With the pressure practically zero at the filter level, the retained water will be squeezed out of the soil into the filter. This dewatering will occur and continue until the pressure at the filter level is equal to the atmospheric pressure.

To set up a vacuum filter system, a wellpoint is inserted into the ground within a hole about 1 ft in diameter. The hole is filled with sand up to a few feet from the top of the fine grained layer. From here to the ground level the hole is filled with a silt or clay which will seal up the top.

In addition to the 1,000 wellpoints being used, 8,300 12 in. sand drains, with a bentonite seal at the level of the meadow mat, also have been installed. Drains are set at 12 ft centers. This procedure is expected to save three months time over the more standard surcharge placement method. It has been estimated that this method may produce savings of as much as $800,000 over conventional methods.



MARSHLAND AREA where sand drains, wellpoints and vacuum methods are being employed to consolidate and stabilize soil within the distribution building site.



2 easy ways to drop out unwanted detail

Take your choice of these short cuts whenever standard drawings must be modified . . . or parts of a design must be eliminated.

1. Reproduce the drawing on Kodagraph Autopositive Paper—you get a positive photographic intermediate directly, with dense black lines on a clean white translucent base. Scissor out the unwanted detail . . . and make another Autopositive Paper print. Lots easier than redrafting—and so is the alternate method.

2. Reproduce the drawing on Kodagraph Contact Paper, Fine Line. You get a negative with clean open lines on a dense black background. Now "opaque out" the unwanted detail . . . and reproduce the print on Kodagraph Contact Paper, Translucent.

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Peak Performance

The camera last month caught a U.S. Army helicopter lending some high-level assistance on a German construction job. The craft hoisted a 250 lb cross into the air and lowered it to the top of a church steeple in the Bavarian town of Konnersreuth.

Engineering Work Starts At Mont Blanc Tunnel Site

With surveyors and geologists already at work, French and Italian authorities expect to get construction on the long-planned tunnel under Mont Blanc underway by spring.

By then, some 3,000 men and their equipment are expected to be at work on both ends, with a completion date set for the end of 1960.

The Italian end of the tunnel will be located almost at the town of Entreves, on the banks of the Dora Baltea River, about 10 miles north of the winter resort of Courmayeur. The tunnel mouth on the French side will be at Hameau-des-Palerins, near the resort of Chamonix. Elevation at the French side will be 3,946 ft; at the Italian side, 4,526 ft above sea level. The center of the 39,032 ft tunnel will be higher than either side, at an elevation of 5,232 ft. The tube is to be 27 ft, 10 in. wide and 22 ft, 8 in. high, to permit two paving lanes of traffic.

Steel Firm Plans Tallest Building in West Germany

Phoenix-Rheinrohr Corp., West German producer of crude steel, will start work shortly on a 26 story office building for its own use in Dusseldorf.

Rising 290 ft from street level, the structure will be West Germany's tallest building. It will cost $7½ million.

Two Dusseldorf architects, Helmut Hentrich and Hubert Petschnigg, are designing the building. They won the commission in an architectural competition.

Floor areas will vary from 2,500 to 4,800 sq ft. More than 1,200 employees will occupy the structure. Facilities will include an employees' cafeteria, cellar parking for 300 cars, complete air conditioning and eight elevators.

Dutch Ports Eye Needs Of New Super Tanker

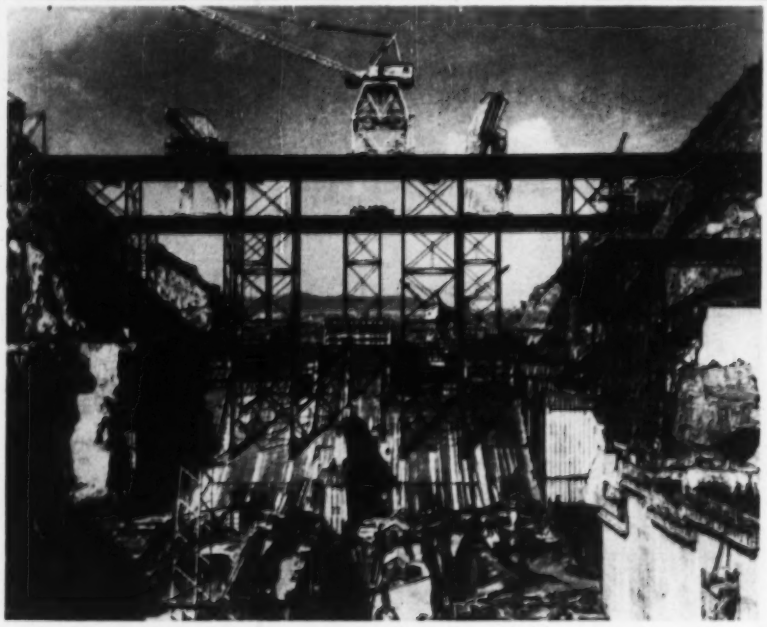
The effect on the world's seaports of the newer and much larger oil tankers now under construction has been reflected in Holland. The country has been advised that it will be necessary to modernize the ports of Amsterdam and Rotterdam.

Prof. Jaccobus P. Thijsse, general advisor for the Netherlands government on national construction works, said that Rotterdam would have to take drastic measures. Amsterdam, he said, could do the job with comparative ease, since its present North Sea canal could be deepened and widened if necessary.

Argentina Sets Up Funds For Improving Highways

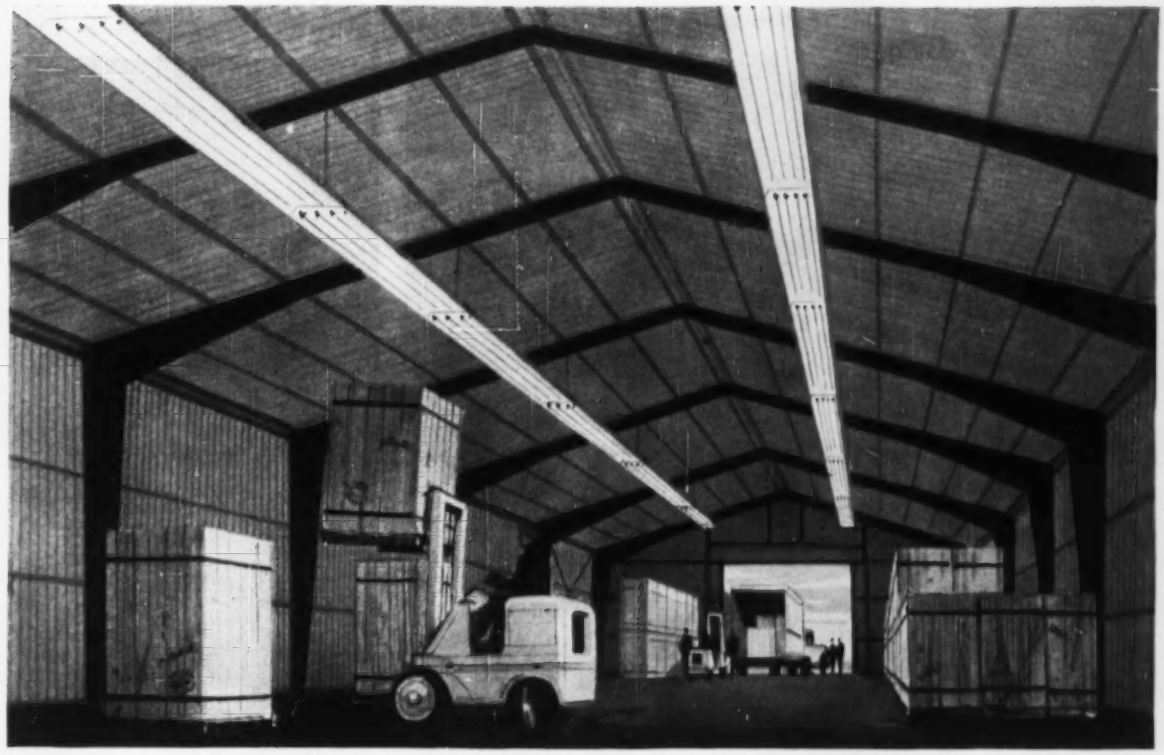
The Argentine National Highway Commission has allocated $45.4 million for highway construction in the country's three northern provinces of Corrientes, Entre Rios and Misiones.

Much of the work will involve construction of all-weather roads, although only a comparatively small portion of projects will include hard surfacing.



Bhakra Dam Reaches the One-Third Mark

Bhakra, to be one of the world's highest straight gravity dams, is now one-third complete. Some 1.6 million cu yd of concrete have already been placed, raising the East Punjab, India, dam to the first 200 ft of its final 680 ft height. A 250 ft high reinforced concrete powerhouse below the dam will be the biggest single hydroelectric station in the East. It will hold five generating units of 90,000 kw capacity each.



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Stran-Steel's clear-span construction is an important feature to remember when you're building a warehouse. This unobstructed interior design gives you more room — wall to wall, floor to ceiling. That means more efficient materials handling, greater storage space.

What's more, Stran-Steel buildings offer many other bonus features which make them ideal for warehousing and materials handling. The rugged all-steel construction is durable, non-combustible, weather-tight and long lasting. *Stran-Satin* exterior walls provide an attractive, luxurious appearance. Pre-engineered and factory-built in 32-, 40-, 50-, 60-, 70-, and 80-ft. widths, these Stran-Steel buildings are quickly erected at low cost.

Up to $25,000 is available to finance these buildings through the Stran-Steel Purchase Plan. As little as 25% initial investment; up to five years to pay. For complete details, call your local Stran-Steel dealer or send for the new Industrial Buildings Catalog.

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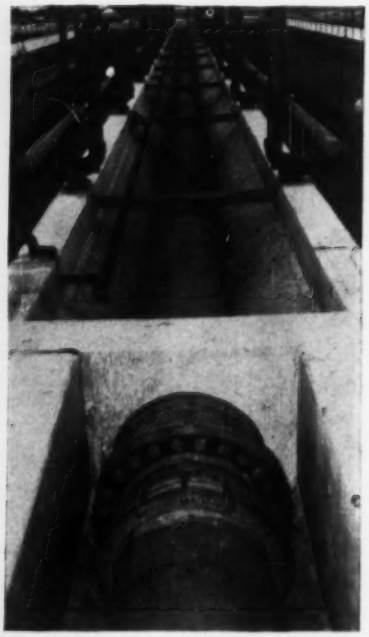
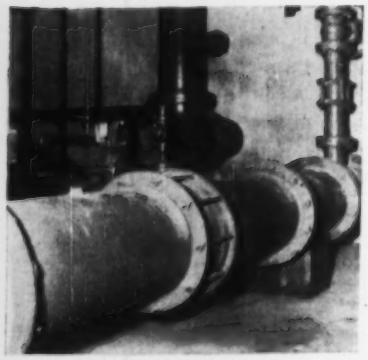


Workmen (left) adjust follower rings before inserting bolts on a 30-inch Style 38 Dresser Coupling. It's the air line leading to the main settling tank in Miami's Virginia Key Sewage Disposal Plant. Steel and cast iron pipe meet in a Style 62 Dresser Reducing Coupling on aeration tank air line (above).

Quick-change Act for Miami Disposal Plant

Steel pipe and Dresser Couplings provide easy access, system flexibility



Dismantling for maintenance looks and is easy with a Dresser Style 38 Coupling. This one joins a low flushing water line in chlorinator building. Another Style 38 is on the vertical line at upper right.

Miami Sewer Project Associates designed the new Virginia Key Sewage Disposal Plant at Miami, Florida, for high reliability and convenient modification.

They sought easy dismantling of permanent aeration lines so maintenance and repair of equipment could be performed quickly. They also wanted an easy way to dismount and set up dewatering lines in new positions as required.

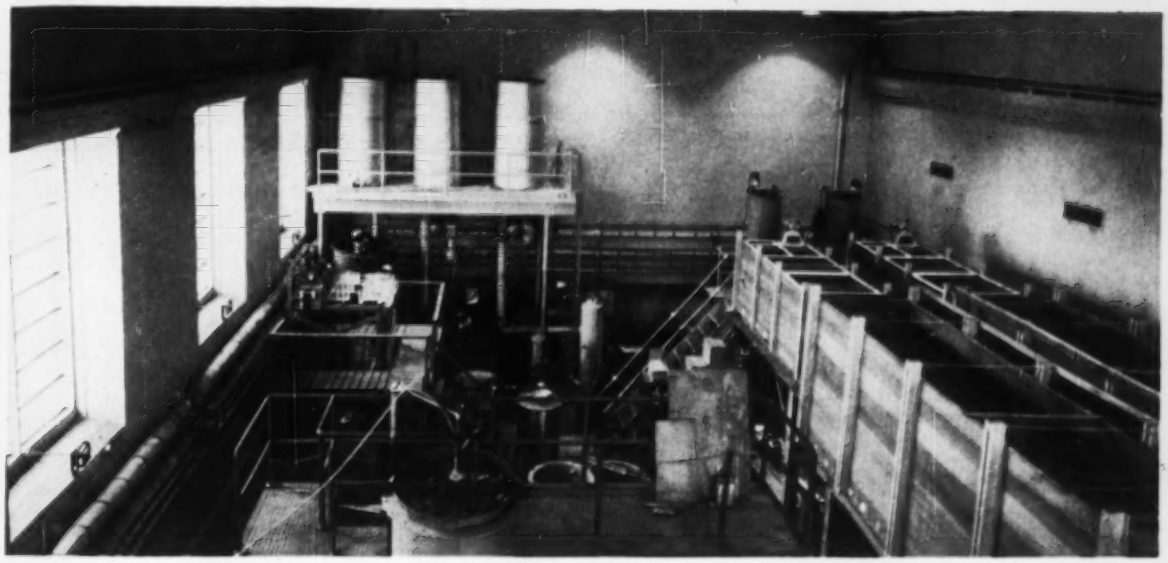
Dresser Couplings were chosen as the ideal answer to this common disposal plant piping problem. They went in quickly, easily and accurately — five precision-made parts, plus required bolts, reduce all pipe joining to a simple mechanical operation. Installations require only a wrench . . . average joining time, two man-minutes per bolt. And they're easy to install in tight places.

Dresser Couplings are a "must" for dismantling purposes. Removal is as easy as assembly . . . and all coupling parts may be re-used in the new piping setup. And, most important in any sewage disposal project, they remove strains on pumps and valves.

Proved in use for more than 60 years, no pipe joining method provides all the Dresser advantages . . . 100% tight, permanent, flexible, simple, fast and economical. Send for complete information about Dresser applications on water, sewage, and industrial waste projects. Write Dresser Manufacturing Division, Bradford, Pa. Sales offices in: New York, Philadelphia, Chicago, S. San Francisco, Houston, Denver, Toronto, Calgary.

ONE OF THE DRESSER INDUSTRIES

The "capitol" of sanitary engineering research, U. S. Public Health Service's center in Cincinnati, moves closer to the practitioner's art with completion of pilot plant facilities.



Pilot Plants Ready to Go at Taft Center

Construction of pilot water and sewage treatment plants at the U.S. Public Health Service's Robert A. Taft Sanitary Engineering Center in Cincinnati is essentially completed. Their early operation will mark the start of a new phase of the center's research program.

Since construction of its six-story, 96,000 sq ft headquarters building in 1954, the Center has concentrated on scientific and laboratory studies. Much of this work is now ready for testing under practical operating conditions, so the new pilot plants represent a well timed effort.

For their part, the practitioners greet the arrivals with, in effect, the release of bated breath. Many practicing engineers had been expressing concern over the previous lack of test facilities within the "capitol of sanitary engineering."

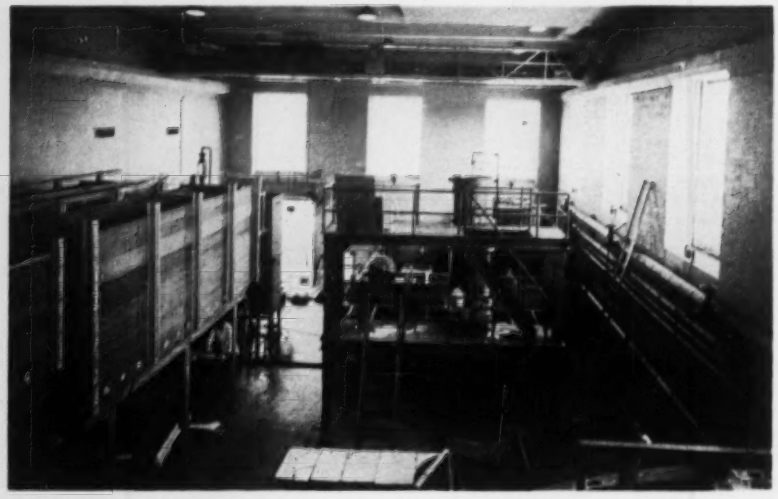
• **Water plant**—Both the new water and sewage facilities are housed in an 84 x 48 ft two story wing of the Center. The pilot water treatment plant can be equipped to receive 40 gpm from the nearby Little Miami River.

Plant components are, of course, quite flexible. Basically, there is a flocculation basin, equipped with mechanical mixing apparatus, that can provide 1 hr detention at maximum flow; a sedimentation basin that can allow 6 hr detention; and space for 16 sq ft of filter area 3 ft deep. Chemical feeding and mixing equipment and recording meters are in ample supply.

• **Sewage plant**—The pilot sewage plant can be operated for any of the different degrees of treatment through high rate activated sludge and high rate trickling filter. Raw sewage will be obtained from a city sewer in maximum amounts of 50 gpm.

Basic equipment consists of plain and mechanically cleaned settling tanks that can be used for primary or secondary settling, trickling filter units in which the depth of filter media can vary from 3 to 9 ft, aeration tanks, and necessary measuring and control devices. Flows to the various units can be varied to give a large range of hydraulic loadings.

• **Work scheduled**—Numerous projects are planned for testing in the new plants. One of the first will be an evaluation of synthetic organic polymers, known as polyelectrolytes, as coagulation aids and as flocculating agents by themselves. Produced by the leading chemical companies, a few of these or-



PILOT PLANT for sewage treatment (at right) can be operated for any process up through high rate activated sludge and high rate trickling filter.

ganic compounds have been tested the Center in 2 liter containers during the past three years. One polyelectrolyte tested, added to turbid water along with alum, was found to increase the rate of settling markedly (95% of floc settled in 2 min). In addition, this compound allowed a reduction of 50 to 75% of the alum dose, was fairly effective alone as a flocculating agent, was remarkably stable to biological oxidation, coagulated almost all algae present and removed up to 45% of surfactant. Another polyelectrolyte tested in the lab size apparatus exhibited a comparable effect on settling rates but few of the byproduct advantages.

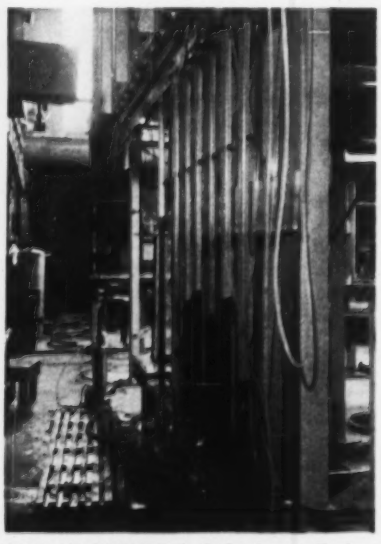
Pilot plant tests of these recent compounds are awaited with great interest by the profession, particularly as to toxic effects which have not yet been determined. Polyelectrolytes may be of significant aid to many presently overloaded water treatment plants.

Other projects that will be proved in the new pilot water plant include studies of filter performance as influenced by various design and operating variables, and studies of the effectiveness of water treatment in removing specific organic chemicals. Increasing quantities of organic chemical pollutants are reaching water plants, and most plants are not designed to cope with this type of pollution. Studies will also be conducted on the removal of viruses and other important microorganisms.

Studies on both the trickling filter and activated sludge processes will be initiated. Of primary interest in the filter studies is a better understanding of the basic factors and principles underlying purification by oxidation beds. Four parallel filter units are contemplated, to permit control of important variables. The activated sludge units will be used initially in studies of toxic effects of metallic ions on the activated sludge process, and in development of practicable control methods. Long range investigation will be undertaken on the development of biological growth capable of stabilizing important specific wastes.

The pilot plant will be used to confirm laboratory results and to demonstrate the practicability of full scale operation. It will be also used in studies of specific difficult problems encountered in the field.

• **Other Center research**—While the new pilot plants occupy the center of the stage for the moment, theoretical and laboratory studies will continue unabated, and in the fields of air pollution, radiological health, epidemiology and milk and food, besides water supply and pollution. Numerous short training courses, meetings and seminars are also held in Cincinnati.



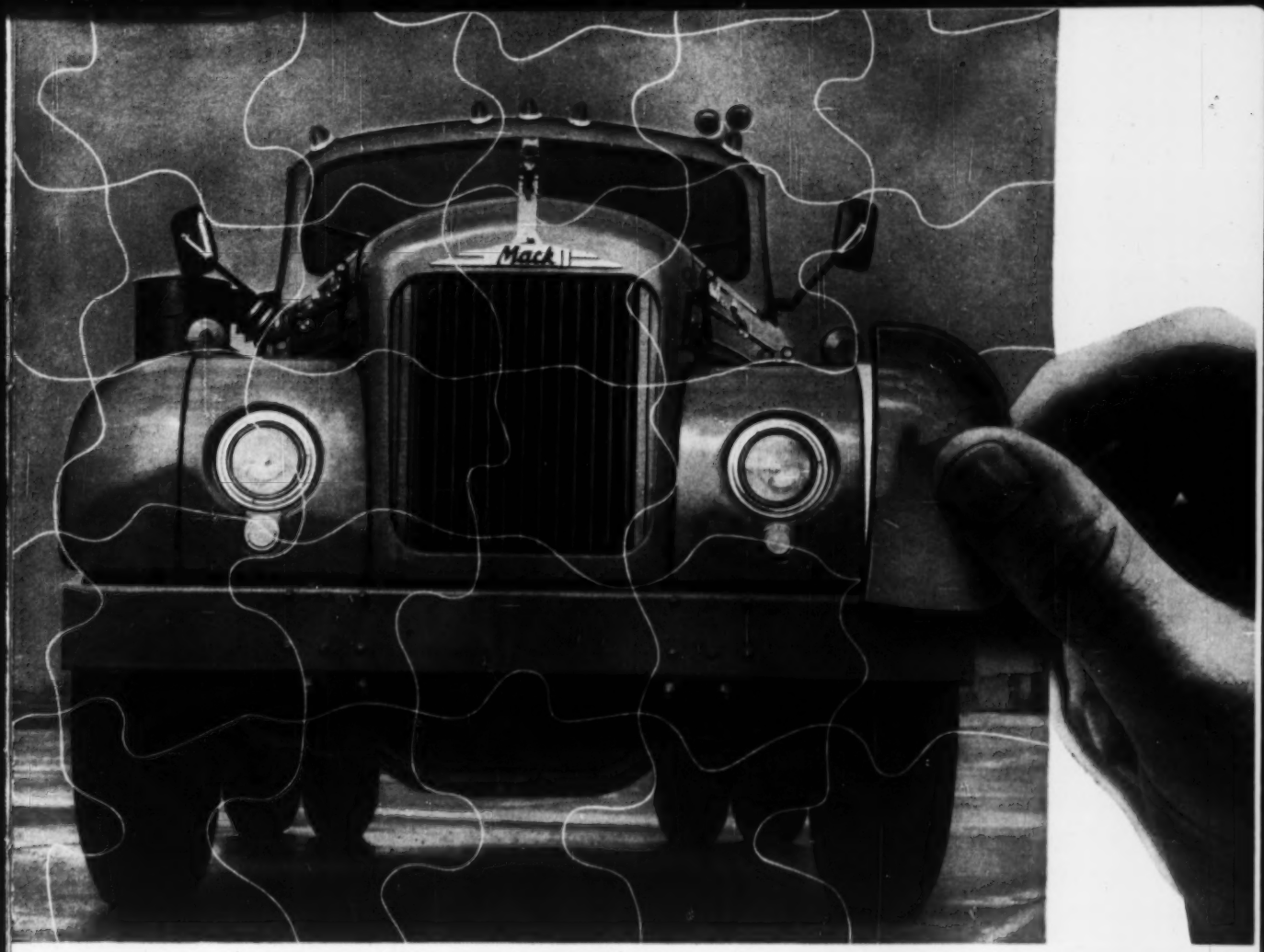
TEST FACILITIES include these tall glass filters for raw water treatment.

Indicating the size of the operation is the center's current annual budget of $3.5 million, of which about 90% goes for research and technical assistance to state and local health and control agencies, and 10% for special types of sanitary engineering training. Of the total, 70% represents salaries of scientific and supporting staff, with a significant item each year for new equipment for laboratory research, such as the pilot plant units that have been described. The laboratory building and fixed equipment are valued at about $5 million. The staff totals about 400 personnel, with half of these on a professional level.

In all, 20 major research projects are being carried on in the water supply and pollution field. Some of the more significant of these projects are these. During last winter and spring a pilot plant for the complete anaerobic treatment of domestic sewage built at Loveland, Ohio, removed an average 70% of BOD and 90% of suspended solids after 24 hr detention in a sludge blanket. This compares with 50 to 60% BOD removal and 75% solids removal for an initial seven-week run in 1956 reported at that year's annual Federation of Sewage & Industrial Wastes Association meeting. A small plant suitable for groups of houses and requiring little attention is the ultimate aim.

• **DO analyzer**—The engineering design of a continuous dissolved oxygen analyzer has about been completed and a model for field test is under construction. The instrument is inserted in the water to be measured, at any depth. Gas in the instrument comes in contact with the water and an exchange occurs whereby oxygen in the gas comes into equilibrium with dissolved oxygen in the water. Then the gas cycles through the analyzer which measures its oxygen content, and thereby indicates the DO of the water.

A technique of isolating and extracting organic contaminants in water—using activated carbon filters—has been developed at the center. Investigators are now attempting to analyze these complex organic materials which cause taste and odor problems and as yet undetermined physiological effects. Also undetermined are the concentrations at which these materials constitute a hazard.



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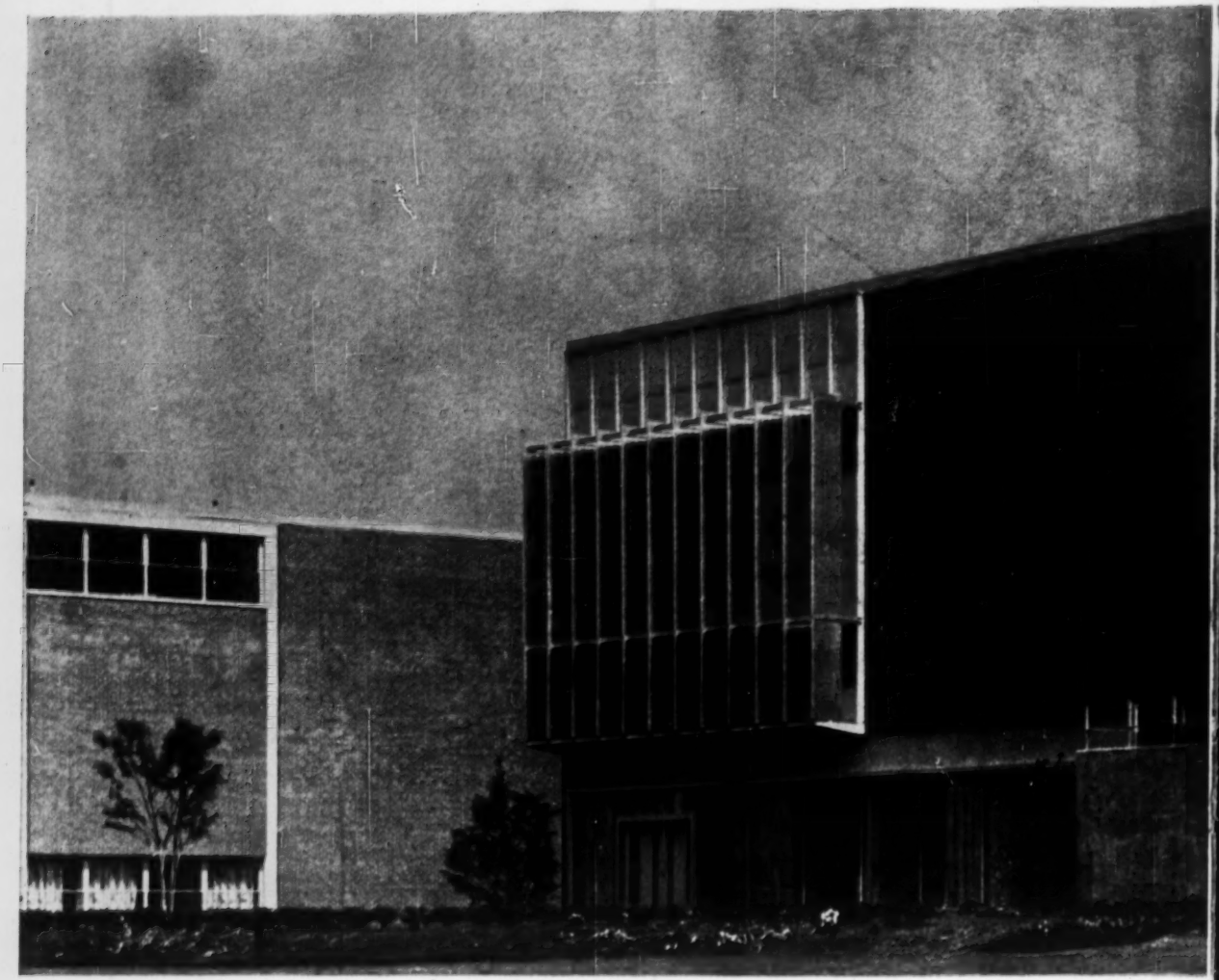
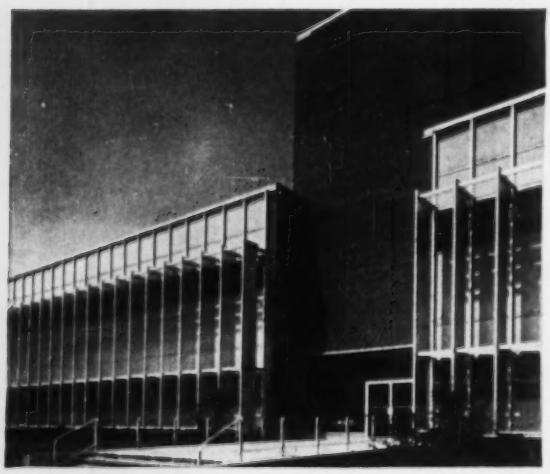


America's foremost plants* feature

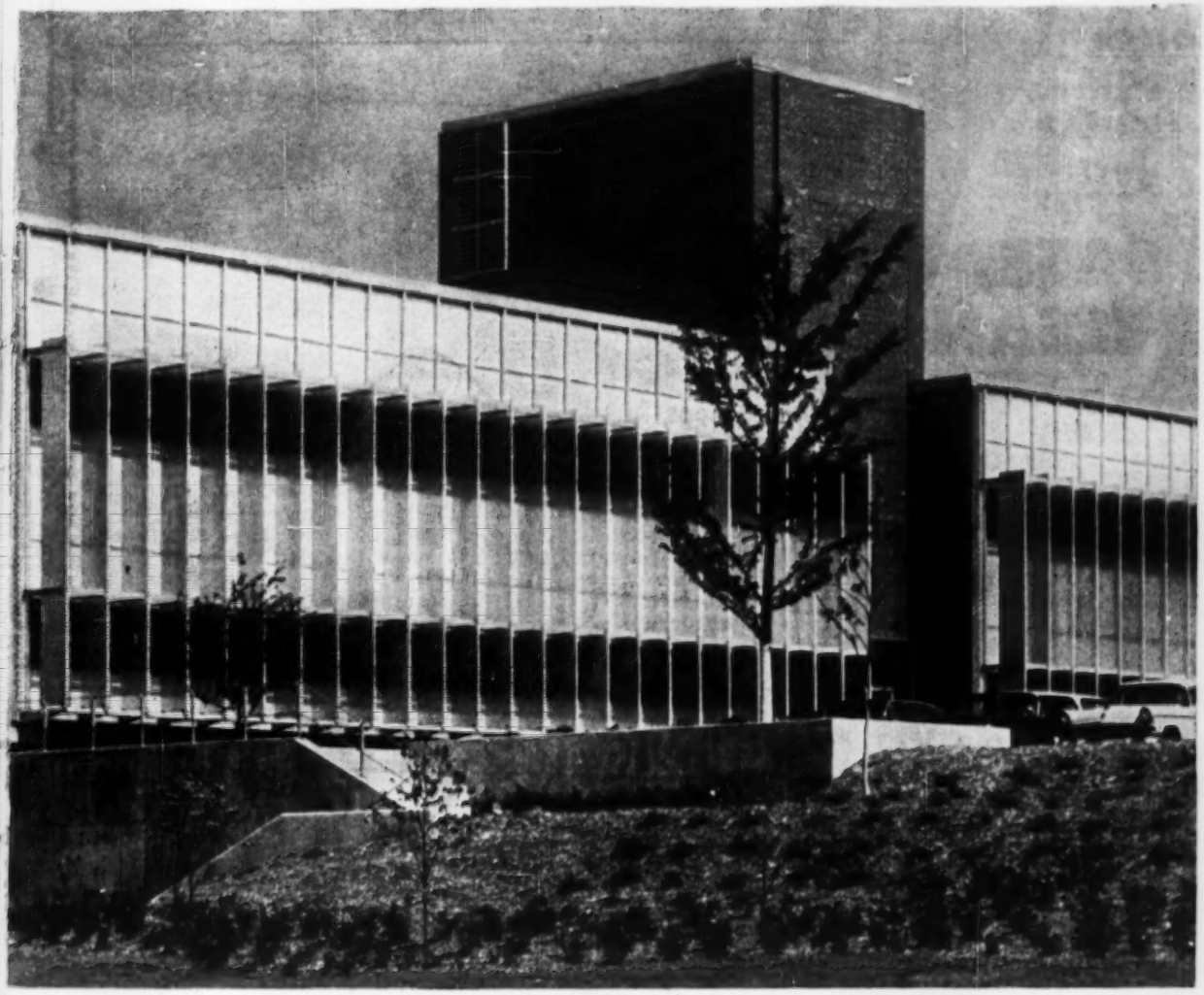


New Lambert-Hudnut plant, one of the nation's "top ten", brightens the landscape with a LUPTON Curtain-Wall System

Voted one of this country's most efficient and beautiful new industrial installations, the Lambert-Hudnut building at Lititz, Pa., makes interesting and practical use of LUPTON Aluminum Curtain Walls and Windows.

The light green porcelain-enameled spandrels of this LUPTON curtain-wall system are visually pleasing, permanently clean and attractive, and in keeping with the impeccable atmosphere desired for a proprietary-cosmetic products manufacturing plant.

In combination with the wide curtain-wall areas and the masonry construction, the use of LUPTON Aluminum Projected Windows gives the final touch of modern functional beauty to this outstanding new building. On approaching



New Lambert-Hudnut building, Lititz, Pa. Architects and Engineers: A. M. Kinney, Inc., Cincinnati, O. Contractors: Robert E. Lamb, Inc., Philadelphia, Pa. Photographs by Courtlandt V. D. Hubbard.

LUPTON metal windows and curtain walls

the Lambert-Hudnut plant, one feels that an exterior of such striking design must shelter an efficient, well-run office and production operation.

The wide range of LUPTON curtain walls offers great freedom of design to the architect, low-cost installation and maintenance to the owner. And leaving the entire job to LUPTON—from manufacture to erection—often effects additional benefits. If you wish, skilled LUPTON crews can install custom or standard LUPTON aluminum curtain-wall systems—quickly, economically. LUPTON's undivided responsibility for the job assures exact compliance with your instructions.

Why not investigate the variety and economy of LUPTON Aluminum Windows and Curtain Walls? See the Michael Flynn catalogs in Sweet's (Sec. 3a and 17a), and speak with your nearest LUPTON representative (listed in the Yellow Pages under "Windows—Metal"). Or write or wire for more information.

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Of the "top ten" plants of 1957—chosen by the Editors of Factory Management and Maintenance from nominations by leading architects and builders—three feature LUPTON curtain walls and windows: Lambert-Hudnut at Lititz, Pa.; Leeds & Northrup at North Wales, Pa.; and Owens-Corning Fiberglas at Barrington, N.J.

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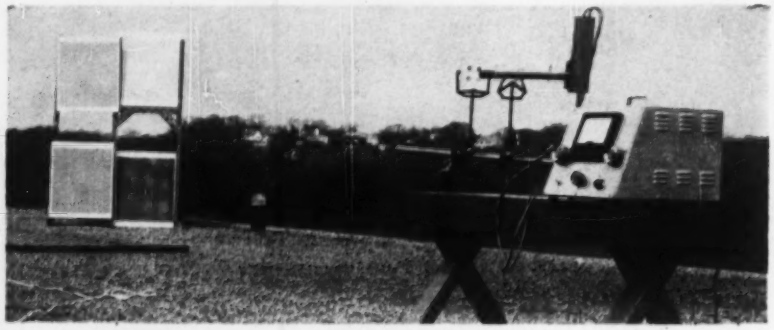

NEW FILM BADGE, using transmitted light, was developed at Taft Center as possible replacement of reflecting Ringelmann charts for measurement of air pollution.

As a result of isolating about 15 plant disease fungi that normally survive the sewage treatment process, center personnel believe that the use of sewage effluent for irrigation of crops, including those which are edible raw, should be investigated carefully to determine the need for elimination of such fungi. Fungi isolated are strains of species that can produce diseases such as seed mold, vascular wilt, seedling blight, blue mold of apples and oranges, and others.

Another very basic research project under way at the center involves studying the effect on taste and odor in water supplies of actinomycetes, aerobic bacteria that grow like fungi under aerobic conditions in soils and lake bottoms.

• **Air pollution**—A leading project in air pollution at the Taft Center concerns a baghouse air cleaner for studying bag filtration parameters. It is the only test unit available for studying filter operation differentially over the length of the bag. Another top project involves a 200 lb per hr multiple chamber incinerator whose dimensions can be varied by means of movable sides. It will be used to study design factors of incinerators as regards particulates, vapors and spectrometry of the effluent air. First results should be forthcoming early in 1958.

Aside from research, the air pollution branch of the center is extremely active in performing evaluation surveys for various states and municipalities. It also collects data from some 110 urban and 15 nonurban air sampling sites throughout the country that form the PHS National Air Sampling Network.

• **Radioactivity**—Center personnel have played a major role in the radiological health field since its inception. Their methods for analyzing radioactive materials in surface waters have been adopted by the American Society for Testing Materials and the American Public Health Association. Aside from numerous public appearances before interested groups all over the country, the center nuclear engineers are currently engaged in stream tracer studies with radioactive materials, in compiling data from a national air and water radioactivity sampling network, and in refining tentative standards of maximum concentrations of the various radioactive materials in surface waters.

• **Who's who**—The Robert A. Taft Sanitary Engineering Center is headed up by Harry G. Hanson, director. Assistant director is J. E. Flanagan, Jr. Water supply and pollution activities are under the direction of B. B. Berger, chief, and R. C. Palange, assistant chief. Section chiefs are W. W. Towne, water pollution; R. L. Woodward, water supply; M. B. Ettinger, chemistry and physics; C. M. Tarzwell, aquatic biology; P. W. Kabler, microbiology; and J. B. Coulter, suburban sanitation.

Conrad P. Straub is in charge of the radiological health work, assisted by L. R. Setter, A. S. Goldin and G. Robeck. Air pollution research is administered by A. C. Stern and F. E. DeMartini, chief and assistant chief. The extensive center training program is headed by H. P. Kramer.

DIRECTOR of activities at Taft Sanitary Engineering Center is Harry G. Hanson.

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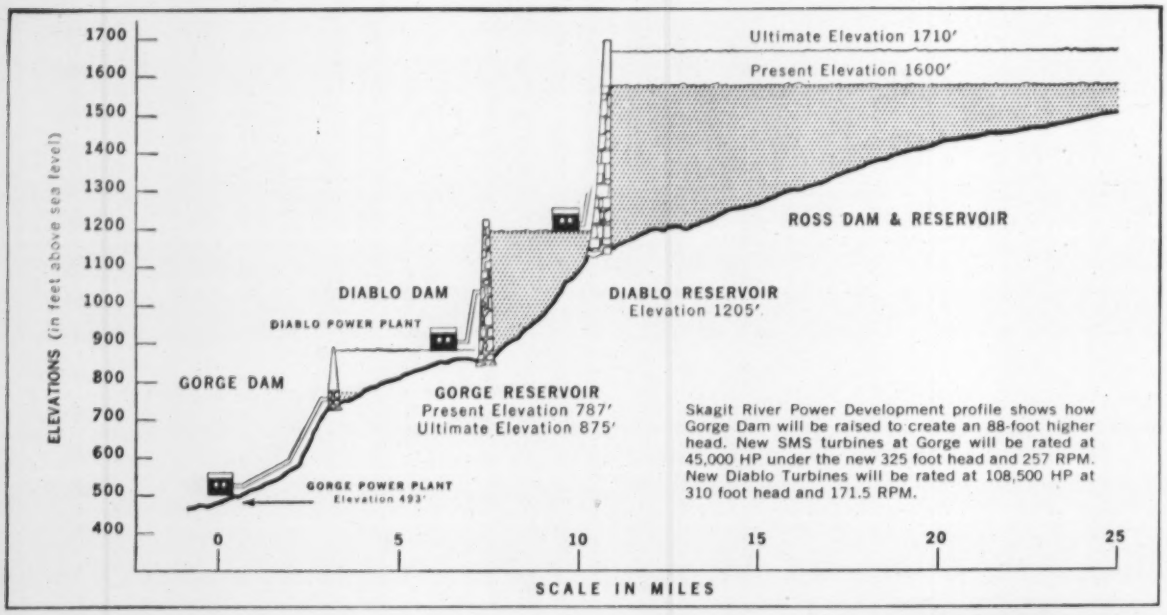
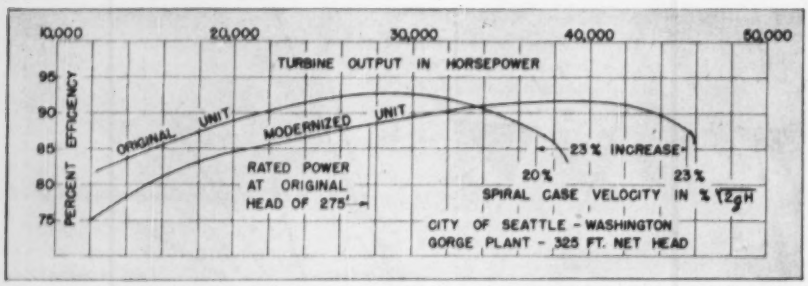
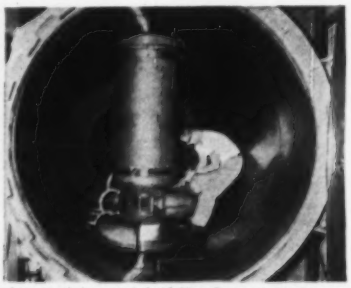


Skagit River Power Development profile shows how Gorge Dam will be raised to create an 88-foot higher head. New SMS turbines at Gorge will be rated at 45,000 HP under the new 325 foot head and 257 RPM. New Diablo Turbines will be rated at 108,500 HP at 310 foot head and 171.5 RPM.



This shows the Laboratory Test performance (power stepped up for head and size), of the existing Gorge runners under the higher head and the new runner and gate design for the same conditions.



A complete model of the Gorge wheel case assembly, built to extreme accuracy, is shown being mounted in the test chamber of the SMS high-head test stand.

CITY OF SEATTLE TO GET MORE POWER

New SMS Turbines In Modernization of Gorge, Diablo Facilities Will Help Increase Capacity 23%

As part of its program to get more power, Seattle, Washington's Skagit River development includes replacement of 35- and 22-year-old turbine runners at the Gorge and Diablo plants, and increasing the height of the Gorge Dam. Rebuilt vertical SMS-Francis runners and new wheel case accessories will give each unit 23% more capacity in the existing wheel cases.

Extensive model tests were conducted for these turbines in the SMS Laboratory's high-head test stand. They proved that the proposed new runner and modified gate designs would not only provide the increased power with very little loss in efficiency, but would have improved cavitation characteristics which permit maintaining the original setting above tailwater elevation.

Research results such as these indicate SMS can provide substantial economies in both new and existing installations with higher turbine speeds and settings as well as smaller spiral cases and inlet valves. A general discussion of turbine rehabilitation, as given at a recent technical presentation, is available without cost. Write on company letterhead to S. Morgan Smith Company, York, Pennsylvania.

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Men and Jobs

A. F. Clark Named Engineer Northwest Pacific Division

Col. Allen F. Clark, Jr., has been named Division Engineer, North Pacific Division, Corps of Engineers, effective Dec. 1. He will be replacing Brig. Gen. Louis H. Foote, who is retiring (ENR Nov. 7, p. 107).

Colonel Clark, now serving as District Engineer, Philadelphia, is a 1932 graduate of the U.S. Military Academy. He also holds a master's degree in civil engineering from Princeton University.

Colonel Powers to Get Philadelphia District

Col. William F. Powers, assistant division engineer, North Atlantic Division, is being reassigned as District Engineer, Philadelphia District, Corps of Engineers, effective Dec. 1. He will replace Col. Allen F. Clark, Jr., who will become Division Engineer, North Pacific Division.

A graduate of the U.S. Military Academy, Colonel Powers received a master's degree in civil engineering from MIT in 1935. He has held the posts of Chief Engineer, Panama Canal Department, and Chief, Operations Division, Civil Works Office, Chief of Engineers.

Careers

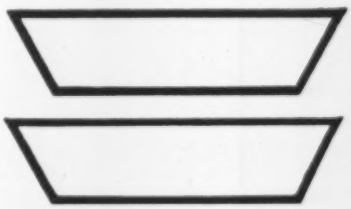
Associations

J. Carroll Duncan, of Alhambra, Calif., has been elected president of the Contracting Plasterers International Association.

A. G. Cochran of Columbus, Ohio, has been named president of the Clay Sewer Pipe Association, Inc., Columbus, a regional organization that is a member of the National Clay Pipe Manufacturers, Inc., Washington,

TRICKY TRACINGS

Question: At a glance, can you tell which of the two pans is larger? See answer below.



YOU'RE ALL RIGHT IF IT'S ARKWRIGHT TRACING CLOTH

Whichever way you figure it, Arkwright Tracing Cloths offer more for your drafting dollars. Made to meet Government specifications, Arkwright's superior surface is completely free of pinholes, coarse threads and other imperfections which cause feathering or blobbing. Its permanent transparency eliminates discoloring and brittleness . . . protects your drawings against the wear and tear of time and constant handling.

Even on the most detailed drawings, Arkwright's perfect working surface assures fast, accurate workmanship . . . provides crisp, clean reproductions. In the simple drawing above, the pans are of equal dimensions.

Be sure . . . use the tracing cloth with the blue line . . . Arkwright. Write for trial samples today. Arkwright Finishing Co., Industrial Bank Building, Providence, R. I.

ARKWRIGHT
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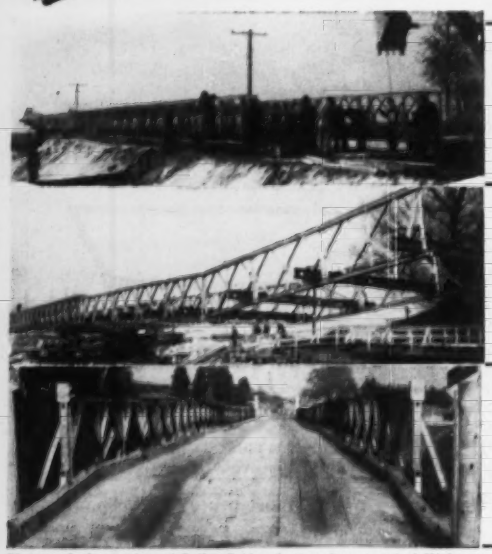
AMERICA'S STANDARD FOR OVER 35 YEARS

A Bridge in a day



9.00 a.m. **ARRIVE AT SITE**
All Bailey Bridge units arrive by standard truck.

12.00 noon. **SECTIONS ASSEMBLED**
Standard components quickly erected by unskilled labor.

3.00 p.m. **BRIDGE LAUNCHED**
Simple launching system cuts equipment costs.

6.00 p.m. **OPEN TO TRAFFIC**
Traffic is rolling again within hours.

Photographs by courtesy of Bailey Bridge Section, Department of Highways, Ontario.

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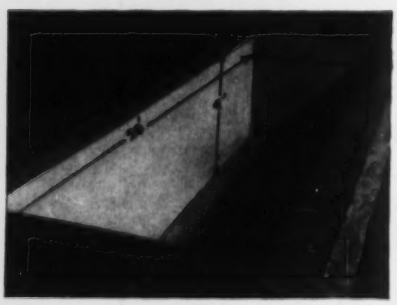
This *Acid Tank* needs no masonry lining



This Acid Tank at large mid-western forging plant, was poured with Sauereisen Pour-lay Concrete No. 54; 20' x 4' x 4', designed for 15% Sulfuric Acid at 150 to 175°F. In use for months with complete satisfaction.

SAUEREISEN No. 54
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The Original Acid-Proof Concrete

provides a truly revolutionary method of tank construction, requiring no masonry lining, no special curing or aging, no additives.

Ideal for lining existing tanks, saving time and replacement costs. 548

•Ask for catalog. **Sauereisen Cements Co., Pittsburgh 15, Pa.**

D. C. He succeeds **Paul R. Rutherford,** who resigned.

Kenneth A. Smith of **W. E. Smith & Sons** has been elected president of the newly-organized General Building Contractors Association of Toledo, Ohio. The organization has a membership of 15 firms.

Business

J. C. Young has been named chief highway engineer and **C. H. Darby,** chief bridge engineer of the staff of Porter, Urquhart, McCreary & O'Brien, consulting engineers of Newark, N. J.

J. Harold Brown has been added to the staff of the Canadian Construction Association, to act as assistant to the general manager.

William T. Wishart is the new structural chief of Chas. W. Cole & Son, engineer and architects of South Bend, Ind.

Harry N. Stamper has been named chief civil engineer for Humble Oil & Refining Co., Houston, Tex.

Victor E. Cole and **W. Frank Bort** have been elected vice presidents of Henry J. Kaiser Co., Oakland, Calif.

Public Works

Thompson A. Dyke has been appointed city planning engineer of Charlottesville, Va. He had been associated with Harland Bartholomew & Associates, the firm drawing up a master plan for the city.

Arthur J. Bray has been named director of the Trumbull County Regional Planning Commission, Warren, Ohio. He will take over the position this month. He was formerly executive director of the Beaver Falls, Pa., redevelopment Authority and City Planning Commission.

Clarence E. Meisner, specialist in flood control economics, has been assigned to the Southwestern Division, Corps of Engineers, in Dallas.

Alexander C. Robinson, retired architect, has been appointed to a term on the National Capitol Planning Commission, Washington, D. C.

Frank Hauseman, an Allentown road contractor, has been appointed as a member of Pennsylvania's Highway and Bridge Authority.

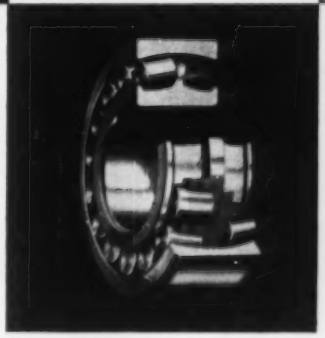
J. E. Jellick, civil engineer-manager of the Portland Cement Information Bureau in San Francisco, has been appointed to a four year term as member of San Francisco's parking authority.

James F. Reynolds, senior engineer of the Providence, R. I. Development Agency since 1955, has been named its executive director. Mr. Reynolds received his BS degree in civil engineering from University of Rhode Island in

TORRINGTON SPHERICAL ROLLER BEARINGS

The Manitowoc 4500 Power Shovel is equipped with Torrington Spherical Roller Bearings in 7 critical heavy-duty, high-speed applications where they eliminate stress concentrations and provide long service life.

How to get a big lift



Torrington Spherical Roller Bearings in critical positions on the Manitowoc shovel help it handle tons of earth and rock with ease and speed!

Accurate roller-to-race conformity and positive roller guidance of Torrington Spherical Roller Bearings insure long, trouble-free service. They are used on the swingshaft, PTO sprocket support, front drum main shaft, front and rear drums, countershaft, PTO pilot and vertical travelshaft. These self-aligning bearings insure smooth anti-friction operation and efficient transmission of power despite heavy radial and thrust loads, housing misalignment and shaft deflection.

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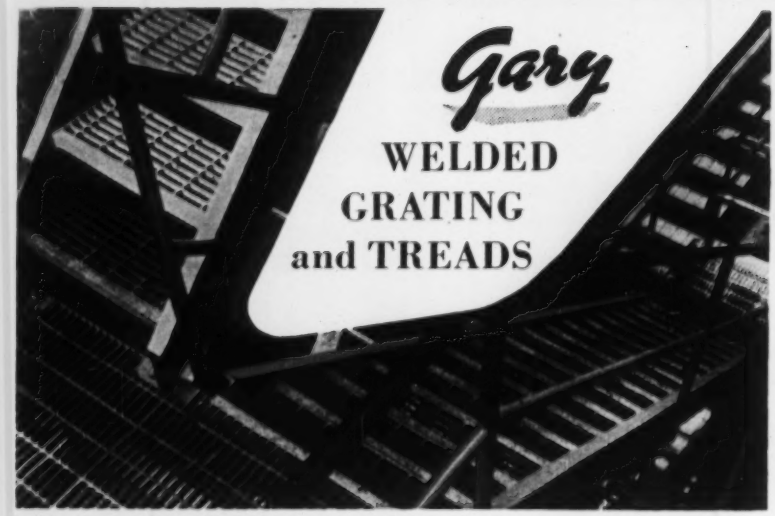

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ROCKWELL SRA **ROCKWELL SPRING & AXLE CO.**
Gary Grating Division
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1949 and later attended Northeastern University and Boston College at Boston, Mass. He is a member of the Providence Chapter of the American Society of Civil Engineers and the National Association of Housing and Redevelopment Officials.

James D. Little, Jr., of Raleigh, has been named development engineer for the North Carolina State Department of Conservation and Development.

Honors

Raymond Fuller, a partner in the consulting engineering firm of Burgess & Nipple, Columbus, Ohio, has been named to receive the George Warren Fuller Memorial award of the American Waterworks Association. Mr. Fuller will receive the award at the association's annual convention in Dallas in June.

Reginald J. S. Pigott, Pittsburgh consulting engineer, will be the recipient of the Elliott Cresson Medal of the Franklin Institute.

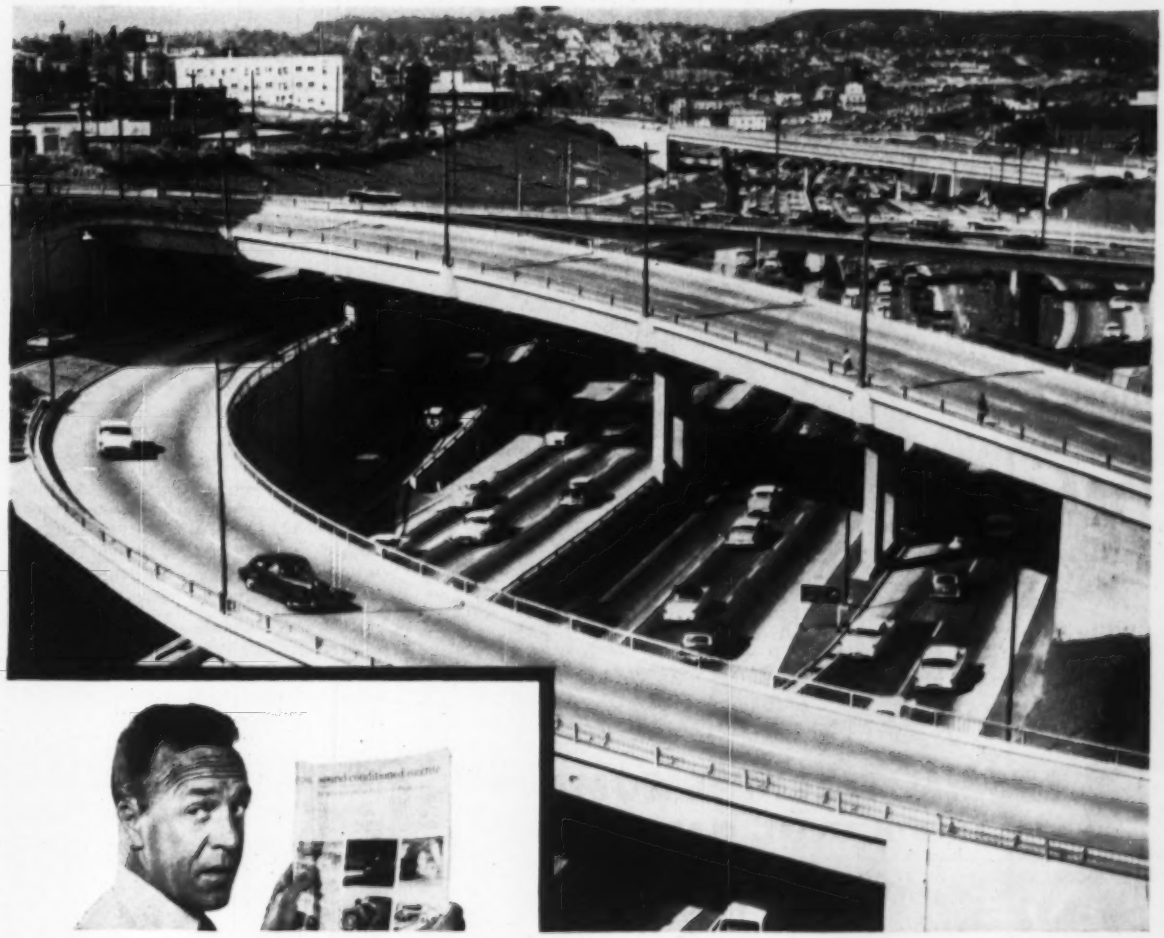
Frank Pagliaro, president of Knickerbocker Construction Co., has been awarded a bronze safety plaque by Employers Mutuals of Wausau. A policyholder of Employers Mutual, his construction firm had a 13.0 accident frequency rate for 1 million manhours worked in a year. This compares with a 19.0 rate for the entire construction industry.

Ole Singstad, tunnel engineer, has received the annual award of the New York chapter of the New York State Society of Professional Engineers for distinguished engineering services.

Eugene J. Lessieu, planning technician of the Port of New York Authority, has been named winner of the Past Presidents' Award of the Institute of Traffic Engineers for a paper he submitted entitled, "Operational Characteristics of High Volume On-Ramps".

Berhardt E. Torpen has been awarded the annual Engineering Achievement Award of the Professional Engineers of Oregon. He had been principal engineer on construction of Bonneville Dam and was chief of the engineering division of the North Pacific Division, Corps of Engineers, at his retirement in 1951.

Edmund A. Prentis, one of the founders of the New York City construction firm of Spencer, White & Prentis, has been selected as recipient of the 1958 Alexander Hamilton Medal, awarded annually by the Alumni Association of Columbia College to a fellow alumnus or member of the college faculty "for distinguished service in any field of human endeavor." Presentation of the award is scheduled to be made next spring.



Look of the future on newest highways calls for new-type concrete. Shown, interchange in Los Angeles.

What's all this talk about

NEW-TYPE, SOUND-CONDITIONED CONCRETE FOR THE INTERSTATE SYSTEM?

It's timely talk—in a new, informative series of PCA magazine messages to create fuller appreciation by the public for the finer, smoother-riding concrete highways being built today.

Significant advances mark today's newest concrete pavement. Highway engineers know about them. (Actually you may have helped develop them.) But—the *public?* Too few know of these advances . . . now so vital on the new Interstate System.

Take *sound-conditioning.* Admittedly, not a highway engineer's term! But it literally defines what has been done to concrete by use of narrow sawed joints for contraction control. The "thump" sound is gone—a dramatic advance! Drivers enjoy a quieter ride.

There's air-entrainment, too—and the granular subbase: both solved technical problems. But by insuring a lastingly smooth, level surface, they add new pleasure to driving. These and other advances today give people a pavement that is truly *new-type.*

All this needs telling. PCA's new nationwide campaign will do that—in non-technical talk the public can understand. An informed public means an appreciative public. This can simplify your job . . . it can help speed construction of the new Interstate System.

HERE TODAY! MORE COMING!

The public is enjoying new-type, *sound-conditioned* concrete on:

Ohio Turnpike
Atlanta Expressway
Hollywood Freeway
New York Thruway

and more than 3,500 miles of other modern highways.

NEW-TYPE Concrete

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

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see why you can confidently recommend these rugged loading ramps

Write to Dept. E-117

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LOOMIS MACHINE COMPANY
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Obituaries

Claude McFall, 71, New Castle, Pa., engineer for the Pennsylvania Highway Department, died Oct. 11.

Frederick C. Woermann, 80, chairman of the board of Woermann Construction Co., St. Louis, died Oct. 13. A graduate of Washington University, where he took a civil engineering degree, Mr. Woermann founded the company in 1913, retiring as president in 1953, when he became board chairman. He was a member of the committee that wrote the 1914 St. Louis Building Code, and in 1950 he helped draft the city's zoning ordinance.

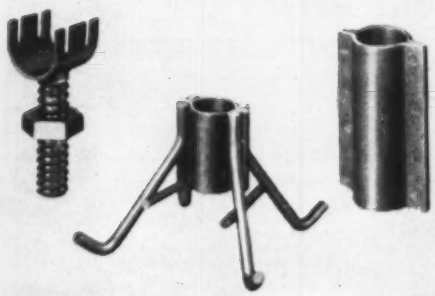
Barton M. Jones, 72, former chief engineer and general manager of the Miami Conservancy District, and retired civil engineer, died Oct. 14 in Utica, N. Y. For 28 years he served as engineer in the planning design and construction of many U.S. dams. He was in charge of construction of TVA's Norris dam, continuing with TVA after its completion as chief designing engineer and advisor in design. Following this he spent seven years as engineering director of Peru's largest hydroelectric development, the Central Hidroelectrica del Canon del Plato. He also served as head of the engineering department at Antioch College. He was a graduate of the University of California.

Jacob Samuelson, 72, retired civil engineer of Seattle, died Oct. 15. Mr. Samuelson retired in 1956 as a vice president of General Construction Co. He came to Seattle in 1905, from Norway, where he had taken a civil engineering degree at Oslo Technical School.

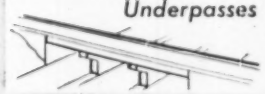
George G. Robinson, 66, civil engineer and president of Standard Paving and Materials Ltd., Toronto, Ont., died Oct. 25. He was a former president of the Ontario Road Builders Association and of the Canadian Construction Association.

Robert T. Knapp, 58, professor of hydraulic engineering at California Institute of Technology and credited with research in many areas of the hydrodynamic field, died Nov. 7. He was a graduate of Massachusetts Institute of Technology and had served on the Cal Tech faculty since 1933.

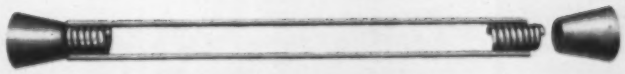
Darius B. Hill, 70, general contractor and founder of D. B. Hill Construction Co., Little Rock, died Nov. 9 in Little Rock. He was a native of Bristol, Va., and attended Stanford University.



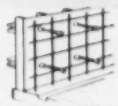
HEAVY-DUTY SCREED SUPPORTS



Overpasses and Underpasses



THREADED COIL TIES



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Heavy-Duty Forming

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Temporary or Permanent Anchorage

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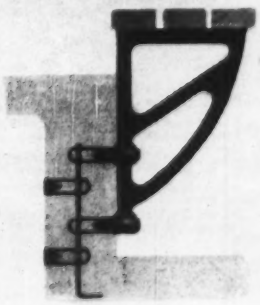
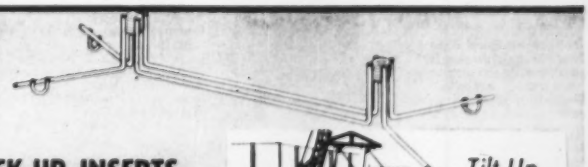


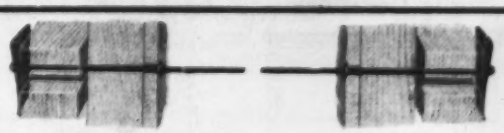
RISER-FRAMES

Stadiums and Grandstands



PICK-UP INSERTS

Tilt-Up Work



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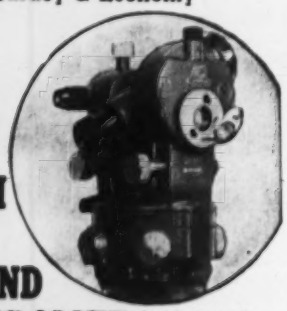

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New York Subway Bids Include Underpinning

The New York City Transit award to Cayuga Foundation Corp., New York of this $9,145,061 bid is on the construction of a connection between two subway systems. Cayuga's low of five bids was 5.6% under the second and 18% below the high bid. It covers the structure only, no tracks.

Underpinning of 40 buildings and Catskill Aqueduct shaft # 20 accounts for $502,800 of the contract price, since the cut will be in a densely populated and built-up area. The majority of the buildings are 5 and 6-story old law brick tenements with stores, between 50 to 100 years old, most having common walls, with a few modern store, office and bank buildings. Underpinning ranges from $400 for a new law 6-story 3 store brick apartment to $55,000 each for two 6-story 5 store brick old law tenements. Cost considers proximity to cut, size of building, column and wall loads.

Wages for New York including fringe benefits: $3.53 for tractor operators; $4.75 for power crane and shovel operators; $4.21 for carpenters; and common labor $3.02.

1C	Cayuga Foundation Corp., 30 Vesey St., NYC	*$9,145,061
2	The Arthur A. Johnson Corp. and Peter Kiewit Sons' Co., NYC	9,689,900
5	Meltzer Assn., Inc. and Rosoff Bros., NYC	11,159,390

Bids: 8-30-57 Items	Unit	Quantity	Unit Prices 1C	2
Exc earth	cy	145,300	$15.00	$22.00
Decking	sy	10,600	35.00	50.00
Sewers, filling	lf	360	7.00	5.00
Concrete masonry	cy	21,800	65.00	70.00
finished surfaces	sf	2,500	0.50	0.40
Masonry, brick	cy	90	150.00	175.00
hollow tile or terra cotta	cy	110	118.00	125.00
removal of	cy	70	150.00	100.00
Plaster on hollow tile	sy	45	1.00	8.00
Mortar plaster for MH's & basins	sy	400	1.50	8.00
Stl beams&shapesriveted	t	3,100	410.00	500.00
Stl & iron, architect	t	4	1,650	2,000
Emerg ex it door, counterbalanced	ea	1	5,000	2,000
Stl reinf bars	t	125	400.00	450.00
Sliding door, type "Jbs"	sf	90	20.00	18.00
Iron castings, misc.	t	12	450.00	450.00
Beam wrap, wire mesh	lb	400	0.75	1.50
Waterproofing, 1 ply	sy	9,000	1.25	1.30
3 ply	sy	13,300	2.75	3.00
4 ply	sy	4,600	5.25	5.30
Dry-ply	sy	5,600	1.00	1.00
Brick, 1 layer in asph mastic	cy	740	150.00	170.00
Ducts, vit clay tunnel	df	61,000	1.00	1.20
vit clay RR	df	21,200	1.25	1.20
3½" asb transite	df	125	4.00	4.00
4" fibre tunnel	df	460	2.55	2.50
Panels for duct MH's, ¾" asb lumber	sf	700	2.00	14.00
3"	lf	50	7.60	3.00
CI pipe, CI 50, A.S.A. 3"	lf	50	7.60	3.00
4"	lf	35	10.60	4.00
6"	lf	30	12.00	5.00
8"	lf	190	19.00	8.00
10"	lf	10	18.70	10.00
12"	lf	20	20.00	15.00
Galv stl drain pipe 6"	lf	25	16.00	17.00
8"	lf	50	28.00	20.00
10"	lf	10	40.00	22.00
Vit drain pipe, 4"	lf	120	4.00	2.00
Broken stone or gravel	cy	1,000	11.00	11.00
Sewer pipe, vit 12"	lf	220	20.00	13.00
15"	lf	550	21.00	15.00
21"	lf	145	21.00	20.00
24"	lf	160	20.00	24.00

Bids: 8-30-57 Items	Unit	Quantity	Unit Prices 1C	2
CI sewer pipe, straight	t	5	400.00	250.00
specials	t	1	600.00	600.00
Sewer, mas, 3'-6" x 2'-4"	lf	700	50.00	50.00
4'-0" x 2'-6"	lf	475	55.00	60.00
House conns, spurs for	ea	70	12.00	11.00
risers for	lf	140	17.00	12.00
House sewers, up to 8" di	lf	210	16.50	12.00
Vit br lin for sewer MHs	sy	50	40.00	45.00
Stl gratings for vent, incl frames	sf	150	10.00	8.00
Floor, timber	Mbf	142	140.00	200.00
Fence, 8' high tight board & 8' wide walkw	ls	job	30,000	30,000
Sht asph rdway restored	sy	5,700	13.00	18.00
Sidewalk restored	sy	800	7.00	17.00
Curb, 6" granite	lf	100	13.00	15.00
Conc curb, stl face	lf	500	11.00	7.00
Gran curb, reset exist	lf	50	9.00	14.00
Roadway, temp	sy	5,700	5.00	8.00
Sidewalk, temp	sy	800	5.00	11.00
Conc upper walls & slabs, 3", const & finish	sy	15	16.00	14.00
Maint support, of RR	ls	job	2,000,000	955,900
CI or stl L P water pipe lay 6"	lf	20	12.00	12.00
12"	lf	200	14.50	13.00
20"	lf	60	20.00	14.00
CI or stl H P water pipe lay 12"	lf	400	15.00	15.00
20"	lf	40	41.00	20.00
CIP, LP water or gas furn new, straight	t	20	400.00	200.00
special	t	5	540.00	500.00
CIP, HP water furnish new, straight	t	20	450.00	300.00
special	t	5	620.00	500.00
SP, water or gas LP or HP, furnish new	t	10	660.00	400.00
Water serv, restore a/o phys interference	ea	4	745.00	150.00
CI or stl gas mains lay 4"	lf	20	2.00	10.00
6"	lf	200	3.00	11.00
8"	lf	50	5.00	12.00
12"	lf	120	7.00	13.00
16"	lf	120	11.00	14.00
Gas serv restored a/o phys interference	ea	8	140.00	200.00
By-pass pipe, gas below ground 4"	lf	20	60.00	60.00
6"	lf	85	35.00	65.00
12"	lf	350	35.00	75.00
16"	lf	320	45.00	80.00
18"	lf	75	50.00	90.00
24"	lf	75	70.00	100.00
street surf.. 4"	lf	60	10.00	17.00
6"	lf	1,000	13.00	21.00
12"	lf	380	14.00	22.00
16"	lf	85	18.00	27.00
with timber housing 12"	lf	380	12.00	25.00
16"	lf	95	15.00	27.00
above ground 16"	lf	275	19.00	22.00
18"	lf	140	20.00	32.00
24"	lf	115	26.00	35.00
26"	lf	115	29.00	40.00
permanent 6"	lf	60	30.00	110.00
Tower supp for OH pipe	ea	6	5,000	4,000
Cable supp to supp bypass pipe to&incl 16" ø	lf	155	70.00	110.00
Ducts, vit clay	df	90,000	1.00	1.00
wood, 3"	df	200	5.00	5.00
fiber, 3½"	df	400	2.35	3.00
iron pipe, maintain & restore 2"	df	400	2.80	3.00
3"	df	2,300	3.30	5.00
3½"	df	1,300	4.00	6.00
4"	df	200	4.50	8.00
new 2"	df	300	3.60	4.00
2½"	df	300	5.50	6.00
3"	df	2,300	6.00	7.00
3½"	df	300	9.00	9.00
4"	df	200	10.50	11.00
Elec serv conns thru sleeves	ea	8	40.00	80.00
Lighting work	ls	job	100,000	75,000
Cable, RILC 18 c/5-#10 & 13-#16	lf	1,200	9.00	9.00
Cable, PILC 250,000 CM 1 c	lf	325	9.60	10.00
2,000,000 CM 1 c	lf	1,800	19.50	19.00
#6 3 c	lf	450	9.00	10.00
#0 3 c	lf	425	14.00	14.00
Cable racks, 27½" sect	ea	70	21.00	21.00
Cable arms One	ea	25	10.00	10.00
Two	ea	35	14.00	14.00
Three	ea	85	21.00	21.00
Telephone work	ls	job	25,000	25,000
Signal work	ls	job	160,000	140,000
Malls & railings, remove & restore	sy	250	45.00	90.00
Underpin: 40 buildings	ls	job	501,800	384,000
Catskill Aq shft #20	ls	job	1,000	2,000
Demolish 6 bldgs	ls	job	70,000	85,000

Commence Nov. '57, Completion Schedule 3½ yrs.
*Contract awarded at $9,226,961.

MELLON NATIONAL BANK (BRANCH OFFICE BUILDING)
SEWICKLEY, PENNSYLVANIA
DESIGNS BY HOFFMAN & CRUMPTON, ARCHITECTS
PITTSBURGH, PENNSYLVANIA
CONTRACTORS: MARTIN & NETTROUR, CONTRACTING CO.
PITTSBURGH, PENNSYLVANIA

Perfect for small jobs like this—
AMBRIDGE STEEL JOISTS

AmBridge Steel Joists arrive at the site completely shop-fabricated, ready to erect. Their light weight, combined with the simplicity of end connections and accessories, appreciably reduces man-hours of erection time. No special equipment or falsework is needed.

This one-story, 52′ x 100′ branch office building is strong and safe *as a bank should be.* For not only was it built around a heavy steel frame, but its floor and roof are supported by steel.

In addition to furnishing 16,700 pounds of structural steel for the frame, American Bridge also supplied 25,000 pounds of AmBridge long-span Steel Joists and 15,600 pounds of AmBridge standard Steel Joists for floor and roof construction.

USS AmBridge Steel Joists provide rigid, lightweight and economical construction suitable for any type of floor, roof and ceiling. The underslung and open-web design provides for maximum head room and allows passage of pipes, ducts and conduits in any direction.

In floor construction, the ease and simplicity of handling reduces installation time to a minimum and permits other trades to begin their work promptly. And, for roof construction, these modern, new-design joists cut the time required to put your structure under cover.

For detailed information about the time- and money-saving advantages of using USS AmBridge Steel Joists on your next job, get in touch with our nearest Contracting Office, or write direct to Pittsburgh for a free copy of our 36-page catalog. It is the only complete steel joists catalog with design information for spans up to 120 feet. Ask for your copy today, or see it in Sweet's Files.

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AMBRIDGE STEEL JOISTS

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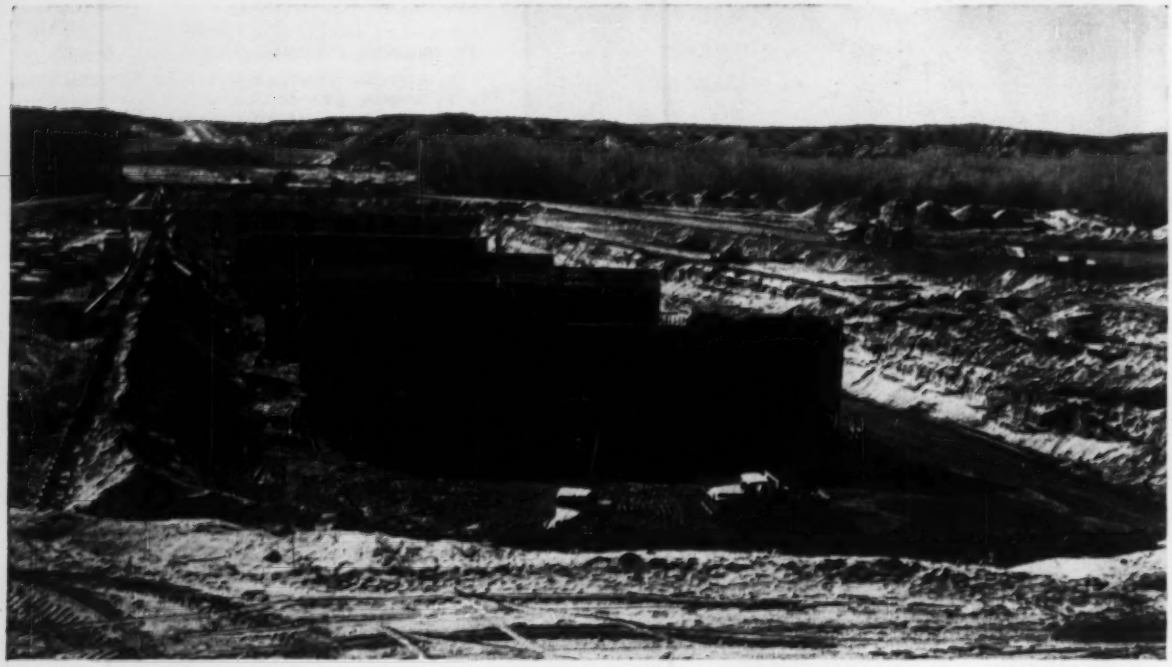

They beat the schedule and reduced the cost —

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STANG WELLPOINTS

"Build seven bridge piers, base them 18½ feet below a wet, sandy riverbed, at an elevation of 3500 feet... and do it in a hurry!" Such was the order confronting contractor Gordon H. Ball during construction of a new section of U. S. Highway 66 near Victorville, California, for the State of California.

Aware of the difficulties involved with a project of this type, general superintendent W. W. Haapala and job superintendent Joe Farrell immediately called on the John W. Stang Corporation.

Acting promptly upon the STANG recommendation, a system of STANG wellpoints was engineered and installed. At an elevation of 3500 feet, the single-stage STANG system achieved a drawdown of 18½ feet and completely dewatered the area to be excavated. *This speedy dewatering, done at a much lower cost than by other methods, allowed project completion ahead of schedule and at a profit!*

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Putting water in its place

STANG

...anyplace!

WRITE FOR BULLETIN 100

JOHN W. STANG CORPORATION

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Dewatering Planning—Equipment—Service

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•573

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate, Ready-mixed Concrete, Asphalt: Last, Oct. 10; Next, Nov. 7
- Iron and Steel Products, pipe: Last, Oct. 12; Next, Nov. 14
- Wood Products, Glass, Explosives, Chemicals: Last, Oct. 24; Next, Nov. 21
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Sept. 26; Next, Nov. 28

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over,			STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over,			BRICK Per M. in quantity		LIME Per ton, in paper, Carload lot,		
	3x12x12 in.	4x12x12 in.	8x12x12 in.	8x12x12 in.	10x12x12 in.	12x12x12 in.	Common backing	Straight hard	Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$149.90p	$149.90p	$299.80p	$334.55p	.....	.....	$30.50p	$32.70p	$23.50	$24.50	$.....
Baltimore	203.00	217.00	406.00	455.50	506.00	661.00	36.00k	41.00k	33.00	22.00	.....
Birmingham	138.00p	152.00p	.....	309.00p	376.00p	465.00p	27.00gf	38.00y	35.02	22.30	26.33p
Boston	232.00†	235.50†	463.25†	556.00†	.....	.....	41.50p	46.50p	39.20†	31.20†	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	30.00	32.00	38.00	35.20e	.....
Cincinnati	205.00j	225.00j	296.00jdd	213.00p	288.00j	314.00j	45.75j	47.00j	30.04j	26.04j	30.04j
Cleveland	209.00	223.00	.....	475.00	.....	.....	41.00	51.50	31.00	25.00	.....
Dallas	152.00	152.00	300.00	364.50	446.25	582.50	27.00	45.25	42.50	24.58	28.05
Denver	.....	.....	.....	.....	.....	.....	31.00	47.50	46.00p	42.00p	46.00p
Detroit	273.00	298.00	545.00	.....	662.00	755.00	47.50p	48.00p	38.00	30.00	.....
Kansas City	158.00	158.00	312.00	312.00	400.00	500.00	33.00	33.00	36.26	34.26	29.76
Los Angeles	r	r	r	r	r	r	32.50q	.....	38.00	38.00	39.00
Minneapolis	188.00p	210.00p	429.00p	210.00pw	.....	.....	43.00vp	52.50y	47.00bbe	37.00bbe	49.00bbds
Montreal	170.00au	178.00au	325.00aus	270.00q	400.00q	.....	42.00b	56.30b	39.00	22.00	13.28
New Orleans	186.00	186.00	380.00	380.00	.....	.....	40.00	58.00	44.00	32.00	32.00P
New York	158.10A	168.60A	231.70eA	255.20An	.....	.....	44.00	.....	38.00	35.00	.....
Philadelphia	169.00	180.20	337.90	405.00	.....	.....	30/34	38/42	27.60	25.60	3.17m
Pittsburgh	147.50t	157.75t	295.00t	335.90t	435.00t	500.00t	39.00t	46.00t	32.00t	28.00t	.....
St. Louis	178.50	185.00p	391.00p	401.00p	459.00	621.50	43.00t	41.50	0.95as	.80as	1.35as
San Francisco	168.55*	177.10*	235.30dd*	.....	.....	.....	43.00*	43.00*	27.75	27.75	30.50t
Seattle	225.00p	250.00p	450.00p	250.00pre	.....	.....	43.00	57.00	52.00bb	38.00bb	4.50mbb
Toronto	146.00	157.00	280.00	234.00f	395.00	.....	35.00	63.00	36.00	33.50	31.50

*† F.o.b. Yard. *** F.o.b. plant Stockton. *†† F.o.b. yard Roxbury. *s Smooth. *s,8 x 16 x 12. *t 2% cash. *u Incl. Federal tax. *v Sand lime. *w 8 x 8 x 12 month. *(8 x 8 x 12 *y Lumps, $26.72. *b F.o.b. trucks, lob site N.Y.C. *c 60 lb sacks. *j Truck load or over. *k $1.00 discount. *l Red fare. *m Per bbl., 180 lb. processed. *n 7¾ x 7¾ x 12. *o Mason's double hydrated pressure. *p Truck lots. *q Provincial and Municipal tax extra. *r Not used: earthquake danger. *t Chi common. *r Pebble: 80 lb sack. *as 50 lb sack. *bb LCL. *bd 8 x 12 x 12.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry a	WHITE LEAD Per 100 lb. in 100 lb. cases In oil w	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 300 lb. bbl. per ton
Atlanta	$16.50	$30.125	$3.86	$3.86	$3.31	$3.39	$2.20	$2.62	$0.67	$67.75
Baltimore	16.25	29.75	3.00	4.40	3.50	2.78	4.25	4.25	.48	80.18
Birmingham	16.50	30.125	3.90	3.40	....	3.09	2.29ii	2.29ii	.82ff	45.00ee
Boston	16.25	29.75	....	....	....	3.63qq	2.83oo	2.83oo	.80qq	58.00y
Chicago	16.25	29.75	....	....	....	3.69tu	2.98le	2.98le	48.00¢bbe	55.70‡
Cincinnati	16.25	29.75	....	....	....	3.13	2.70	2.73	.428p	55.96
Cleveland	16.25	29.75	2.56pee	2.63q	2.97pp	3.73q	2.85e	2.85e	.501y	47.00qq
Dallas	16.50	30.50	....	3.20B	....	3.00u	3.00e	3.00e	.464	65.00kk
Denver	16.75	30.25	3.20	3.15	3.64	2.89	2.10e	2.40e	.48ff	50.00
Detroit	16.25	29.75	2.70	3.95	2.70	3.80	2.54f	2.409f	.68¢ff	47.30
Kansas City	16.25	30.50	3.94	3.38	2.96	3.60ii	2.76e	2.76e	.664y	....
Los Angeles	16.25	30.00	3.30n	4.50n	4.30n	3.20n	2.15en	i	.70nn	i
Minneapolis	16.25	29.85/29.75	....	....	....	2.99	2.41hi	2.41hi	.442i	50.00v
Montreal	....	.....	3.02Dgft	3.94zgft	4.68kgft	3.40	4.68f	4.68f	1.60	.....
New Orleans	....	.....	....	....	....	3.00	2.29	2.85	0.680	.....
New York	15.75U	29.75	....	....	....	3.19	2.45e	2.45e	.425e	49.00*
Philadelphia	16.25	29.75	3.60	3.40/3.85	3.80/4.60	3.00/3.30	2.54e	2.54e	.37/.45	48/54
Pittsburgh	16.25	29.75	2.10dE	2.25dF	2.25dG	3.37z	2.59z	.45	.....	.....
St. Louis	16.25	29.75	....	....	....	3.70ddz	2.75hh	2.75hh	.46y	64.00
San Francisco	16.25	30.00	3.20	4.30	3.50	2.69	2.09aa	3.10	.47jj	54.00
Seattle	16.25	30.25	3.47rc	4.19ee	....	3.82gee	3.30hee	....	.80rc	47.20ee
Toronto	.....	.....	....	....	....	4.48	4.45e	4.46e	1.70j	88.00A

*† Delivered. * Note: Red lead in oil 50% higher than white lead in oil. ** Aver. wt. approx. 425 to 550 lb. drums. *a Red lead prices change frequently due to oil lead price changes. *b U.S. War Dept. Spec. 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e 15 lbs. *f Per 432 sq ft. *g F.o.b. yard, Roxbury. *h Per roll, 65 lb. *i Net carload prices, Minneapolis and vicinity. *j 45 gal containers. *k Over 80% ferric oxide. *l Not used. *n F.o.b. city. *o Per 80 lb roll. *p 5-drum, 50 gal each. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Incl. Federal tax. *u Per 90-lb square. *v Per ton. *w Price to contractors $1.25 less. *x Ready-mixed. *y 55-gal container. *z Drums. *aa 15 lb. sq ft. price changes. *bb Roofers coating and cement. *cc LCL, truck delivery. *dd Asphalt pitch in 100 lb package. *ff 5-gal drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per roll. *jj Asbestos roof coating. *kk 400 lb barrels. *ll ASTM Spec. D982-49. *(C 98½. *(D Std. black. *z Milt. spec.: E TTP27; F TTV81; G TTP31.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER† Neat per ton	Gauging per ton	VERMICULITE† Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated	PERLITE† Plaster Aggregate	Concrete Aggregate Untreated	ALUMINUM SHEET†† Flat .102" th 36"x96" & 48"x144" per lb/pt	Corr roof .032" th 35"x12' per sht	STAINLESS STEEL† SHEET-TYPE 302g 20 ga 48"x96-120" per cwthh	28 ga 36"x120" per cwtmm	COPPER WATER* TUBING-TYPE L 2000 ft lots per ft ½"b	½"e
			per bag of 4 cu ft										
Atlanta	$31.00	$36.00	$1.55e	$1.65e	$1.80af	$1.65	$1.65	$0.422q	$8.97n	$61.44n	$67.50	$16.74f	$23.41f
Baltimore	23.25	33.65	0.95	1.15	1.15	1.15	1.65	0.431	0.489r	56.25	64.25	0.1674	0.2341
Birmingham	33.00	39.00	1.55	1.55	1.80f	1.55	1.55	0.466	10.48	67.34	78.09	0.1808	0.2249
Boston	22.00	30.00	1.40	1.40	1.45	1.45	1.50	0.438	30.10p	65.42dd	71.92ddff	0.1556	0.2171
Chicago	26.80	26.80	1.55	1.60	1.60f	1.60e	1.60e	0.506g	10.376a	65.15aee	73.90aee	0.1556	0.2171
Cincinnati	28.00*	28.00*	1.75	1.75	1.75	1.85	1.90	0.434	9.56	65.00	71.28ff	0.1556	0.2171
Cleveland	26.50	43.00	1.13k	1.16ii	1.24l	1.45	1.45	0.506aa	8.66	65.33oo	74.08oo	15.56f	21.71f
Dallas	30.00	32.00	1.05	1.21	1.37l	1.21	1.37	0.474	0.5100r	67.59	80.00	0.200	0.2810
Denver	25.00	25.00	1.50	1.40	1.50	1.40	1.55	0.462	10.18	66.50qq	74.80qq	0.1804	25.21
Detroit	25.00	25.00	1.28	1.32	1.41	1.45	1.45	0.456a	10.376a	65.15a	73.90a	13.75f	24.50
Kansas City	30.00	35.00	1.29	1.45	1.48l	1.18	....	0.444	11.40	67.50	76.25	15.56f	21.71f
Los Angeles	26.20	27.20	1.25k	1.15k	1.25	1.00	1.10	0.506	10.543d	67.10	75.85	0.1556	0.2249
Minneapolis	33.00	33.00	1.55	1.60	1.60	1.40	1.40	0.503	15.15w	68.21	74.71ff	0.1608	0.2244
Montreal	27.60A	35.60A	1.20	1.40	1.50	1.15v	1.15v	0.437	9.92	66.50	.....	0.1827	0.2160
New Orleans	32.00	45.00	1.25	1.25	1.25	1.25	1.25	0.444	8.78f	68.00	76.00	0.1591	0.222
New York	24.00	30.00	1.35	1.30	1.50	1.40	1.40	0.506a	10.14ad	66.58	77.33	15.95f	22.25f
Philadelphia	23/25	32.00	1.35	1.35	1.40l	1.05	1.05	0.44qw	9.46a	66/68q	75/77a	20.00f	28.75f
Pittsburgh	28.00nn	28.00nn	1.60nn	1.50nn	1.35	1.50	1.65	0.456	9.8	63.41	72.75pp	0.1373	0.1916
St. Louis	29.00	40.00	1.35	1.60jj	1.55	1.60	1.60	0.492	10.37	70.86	77.38q	15.56¢m	22.22¢m
San Francisco	27.85	32.00	1.20	1.20	1.30	1.20	1.30	0.505	9.13	65.20	73.75	0.1765	24.63
Seattle	41.00	44.00	1.55	1.25k	1.85l	1.80k	....	0.506	9.984	67.08	88.08	0.1608	0.2249
Toronto	28.50	45.50	1.20	1.30	1.45l	....	1.55	0.4095	24.00ae	73.74	86.52	0.2562	0.3029p

*trucklots, delivered †fob warehouse *fob city *a delivered *b ½" O.D. *c ¾" O.D. *d 0.100"th *e 34" x 80" sheet *f per 100 ft *g 5 tons & up; cold roll, anneal & pickled; 2B finish *h Incl. Federal tax *i 1100 & 3003 alloy, mill finish *k bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob mill, fr allow *o 100 sq ft *p per lb. *q 30 lb bag *t 38" x 96"; 10.81 lb /sh; 48" x 144"; 21.7 lb /sh *u 19.31 lb /sh *v fob plant *w 48" x 144" *x 100th *y 27 gauge *aa 10M lb & up *dd add $0.75 cwt boxing *ee 4 tons & up *ff 26 ga *gg add $2 cwt boxing; $0.75 /cwt on skids *hh Theoretical wt for 48" × 96"; 80.4-lb. per sh. *ii 300-bag lots *jj 100-lb bag *mm Theoretical wt: 19.7 lb per sh. *nn 2% cash *oo skid packed *pp type 302 *s revised

Materials and Labor Prices — Monthly Market Quotations by ENR Field Reporters

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BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION loose, per 40-lb bag a	3" batts per M sf	ALUMINUM FOIL 60# Kraft Expansible 1 side foil per roll of 250 s. f.	Blanket 2 layers foil per Msq.ft
Atlanta	$70.00	$80.00	$43.50	$70.00	$70.00	$127.00	$70.00	$1.00	$60.00	$2.00[b]	$75.00	....	....
Baltimore	51.25[f]	44.75[f]	32.55[f]	55.00[f]	65.00[f]	108.50[f]	69.00[f]	1.30	66.50	1.50	45.00	$4.00[g]	$33.50
Birmingham	73.00	80.00	47.77	75.00	82.00	136.50	81.00	1.40	70.00	1.80	78.00	3.30[g]	....
Boston	60.00[m]	50.00[m]	36.00[m]	60.00[m]	65.00[m]	120.00[m]	79.00[kn]	1.45	75.00	....	65.00	5.30	52.50
Chicago	97.00	82.00	43.00	62.00	85.00	123.00	85.00	1.85	80.00[k]	....	63/65[t]	5.25[g]	....
Cincinnati	48.00[w]	42.85[w]	32.05[w]	51.16[w]	70.00[w]	125.00[w]	72.50[w]	1.30	63.00	1.30	76.80	3.12½	50.00
Cleveland	60.50	55.00	40.00	65.00	74.00	130.00	80.00	1.35/1.50	80.00	....	62.75*	20.00[o]	60.00
Dallas	58.00	55.00	42.50	65.00	73.50	122.50	70.00	1.94	66.70	1.40	66.10	4.30[g]	....
Denver	62.00	54.50	41.00	62.00	75.90	126.00	74.90	....	71.00[u]	1.25[s]	75.00[s]	11.00[r]	21.00
Detroit	57.50	49.50	36.00	61.00	69.50	90.00	69.00	....	....	1.95[b]	83.00	....	....
Kansas City	55.00	55.00	40.00	....	72.00	115.00	75.00	1.40	75.00	2.00	75.00	4.11[d]	44.10[t]
Los Angeles	64.0[c]	59.00	0.33[5]z	66.50	71.87	121.25	80.00	....	83.00	1.35[s]	64.00	4.40[g]	....[z]
Minneapolis	75.00	65.00	0.40z	80.00	78.00	140.00	78.00	2.00	80.00	1.80	80.00	5.50	....[z]
Montreal	56.00	47.40	36/39	53.00	63.25	....	63.00	1.50	66.00	1.50	66.00	9.00[q]	56.00
New Orleans	57.00	48.00	45.00	60.00	75.00	125.00	72.50	1.75	65.00*	....	....	....	....
New York	53.00	45.50	35.00	54.00	71.00	117.00	72.50	1.55[b]	68.50	1.55[b]	68.50	4.05[t]	52.50[z]
Philadelphia	50.55	48.53	34.40	49.54	68.73	105/110	55/65	....	60/70	....	70/75	5.60/6.34	40/50
Pittsburgh	....	47.50	35.00	....	60.00	100.00	55.00	1.05[s]	55.00[s]	1.05[s]	55.00[s]	2.75[t]	38.50
St. Louis	55.00	55.00	39.00	70.00	75.00	120.00	80.00	1.35	85.00	1.65	70.00	4.50[t]	....
San Francisco	55.00	46.50	0.35z	58.00	68.00	109.00	67.00	1.80	66.50	1.60	66.50	4.95	55.00
Seattle	66.00	56.90	49.45	65.00	74.50	125.00	73.50	1.60[t]	74.00	1.60*[p]	50.00*[t]	4.25	46.50
Toronto	61.00	50.00	38.00	64.50	75.00	.....	.....	1.40	60.00	.....	60.00	16.00[e]	45.45

*• F.o.b. warehouse. •a Semi thick. •b 30# bag. •c 12" to 24" width. •d 40# kraft paper, 5 Msf, 100/500 rolls. •e 20# sq ft bag, 4" thick. •f Full trailer loads. •g 80# kraft paper backing. •h LCL. •i 40#. •j 80#. •k 7". •l 2". •m 10 ton quantities. •n Distributor's siding. •o Per Msf roll. •p 32# bag. •q 500 sf. •r Per cwt. •s 35# bag. •t 26# bag. •u Flame proof $75. •w F.o.b. city. •x Sq yd.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Cons
Atlanta	$3.45	$2.90	$3.15+7½[d]	$3.225	$3.125	$3.30+7[e]	$3.30+25[d]	$1.55	$1.55
Baltimore	3.80+10[d]	3.05+7½[d]	3.75+7½[d]	3.55/3.70+10[e]	3.35+7½[d]	3.425+7½[e]	3.30+7½[d]	1.90+7½[d]	1.90+7½[d]
Birmingham	3.65	2.85	3.20+10[e]	2.65[a]	3.05	3.30	3.32+10[e]	1.65	1.75
Boston	3.65+15[d]	3.25+10[d]	3.70+20[e]	3.65+10[f]	3.30+13[g]	3.25+25[g]	2.45+7[d]	2.45+7[d]	2.35+7[d]
Chicago	3.82½+7½[e]	3.45+20[e]	3.80+15[e]	3.40+5[f]	3.70+23[e]	3.65+22[e]	3.55+22[e,m]	2.77½+7½[e]	2.77½+7½[e]
Cincinnati	3.75	3.45	3.50+7½[d]	3.225/3.475	3.50	3.67+4[g,h]	3.65+9½[e]	2.50	2.40
Cleveland	3.715+10[e]	3.74	3.64+10[e]	3.74	3.74	3.765	3.64+10[e,d]	3.00	2.915
Dallas	3.775	3.10	3.125+7½[e]	3.20	3.50+10[e]	3.25+7½[e]	3.25+7½[e]	1.62½	1.62½
Denver	3.75	3.20	3.125+7½[d]	2.95	3.375+12½[d,h]	3.40[f]	3.35+15[d,i]	2.10	2.10
Detroit	3.53+3½[d,j]	3.25+40[e]	3.60+22½[d,i]	3.20+20[d,k]	3.58+34[e,l]	3.65+34½[d,i]	3.63+14[d,i]	2.5k+15[e]	2.5k+15[e]
Kansas City	3.75	3.125	3.20	3.22	3.50	3.475[f]	3.40+9[d,m]	2.255	2.305
Los Angeles	3.80+10[e,n]	3.22½+10[e,d]	3.625+13[e]	3.19+10[e,d]	3.94+15[e,d]	3.90[f]	3.70+10[e,f]	2.50+7½[e]	2.50+7½[e]
Minneapolis	3.575	3.15	3.32	3.10	3.25+23[e,f]	3.25+36[e,n]	3.215+20[e,o]	2.40	2.40
New Orleans	3.425+5[e]	2.90	3.20+7½[e]	3.025+7½[e]	2.985+5[e]	3.275+7½[e]	3.25+15[e]	1.60	1.60
New York	4.25+37½[e,p]	3.90+31½[d,q]	4.30+36[e,p]	4.15+23[e,r]	4.15+50[e,s]	3.65+40½[e,f]	4.10+41½[f,t]	2.80+22½[f]	2.80+22½[f]
Philadelphia	3.75+17[e]	3.535	4.05+18½[d,u]	3.20½/3.95½+10[e]	3.90+15[e]	4.07½+16[e]	4.00+11½	2.25	2.55
Pittsburgh	3.95+17½[e,n]	3.525+7½[e]	3.80+10[e,d]	3.42+10[e,d]	3.575+17½[e,n]	4.00+28[e,d]	3.775+17½[e,n]	2.325+17½[e,n]	2.20+15½[e,n]
St. Louis	3.75+28½[v]	3.35+10[e]	3.37+7½[e]	3.45[f]	3.675+7½[e]	3.75+26[e]	3.70+20[e]	2.40+10[e]	2.40+10[e]
San Francisco	3.95+52½[d,e,d]	3.175+30[e,f]	3.621+10[e]	3.205+10[e]	3.69+30[e,w]	3.525+26[e,f]	3.70+46[e,h]	2.505+10[e]	2.505+10[e]
Seattle	3.75+10[e,d]	2.94+10[e,d]	3.25+10[e,d]	3.13+20[e,x]	3.40+10[e,d]	3.40+21½[e,x]	3.40+23[e,f]	2.51+10[e,d]	2.51+10[e,d]
Montreal	2.20+16[f]	2.00+16[f]	2.15+16[f]	1.90+15[e,f]	2.22+19[e,f]	2.20+15[e,f]	2.22+15[e,f]	1.40+10[e,f]	1.40+10[e,f]
Toronto	2.76+11[e]	2.50+10[e]	2.50+10[e]	2.60+10[e]	2.60+20[e,f]	2.80+11[e]	2.49+16[e,f]	1.55+6[e]	1.55+6[e]

ENR Skilled Average (Bricklayers, Carpenters, Iron workers): $3.594. ENR Common Average $2.334.

* Cost of living bonus incl. in base pay. † FB •a 8 hr. day. •b 7 hr. day. •c 8% vac. stamp fund plus 10¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. •d H & WF. •e 10¢ H & W, 10¢ VF. •f 10¢ H & W, 10¢ PF, 10¢ VF. •g $2.85 homes & housing plus 7½¢ WF. •h WF. •i Inc. 4% VF; 1% PF pd by employer. •k 10¢ WF, 5¢ VP, 5¢ HP. •l 4% VF. •m 7½¢ WF, 10¢ PF. •n 7% V & Hol. 3% H & W, 1% PF. •o 10¢ WF, 10¢ PF. •p 3% WF, 3% PF + 10¢ in lieu of pd. hol. •q 10¢ WF, 6% V & H, 3% PF. •r 4% WF, 20¢ PF. •s 5% W & PF, 4% VF, 1% NC, 1% JI, plus 6 PH. •t Inc. 10¢ WF. •u 10¢ WF, 1% PF, 1½% apprent. •v 1 drum; 2 drums, 2.80. •w 15¢ WF, 15¢ VF. •x 2% VF. •y 10¢ H & W, 10¢ PF. •z 10¢ WF, 5¢ HP. •A 15¢ WF, 15¢ PF, 20¢ BF. •B 7½¢ VP, 5¢ PF, 1½¢ Ed. F. •C 9¢ HI & W & Ins., 7% V & H. •D 10¢ H & WF, 5¢ indus. prom. •E 6% WF, plus travel pay per day. •F Plus $4 per day annuity contrib. •G 10¢ WF, 10¢ VF, 3¢ prom. •H 10¢ WF, 10¢ VP, 3% PF, 2% PH. •I 15¢ H & WF, 5¢ advtg. •J 5% WF, 6 PH, 3% PF. •K 25¢ W & PF, 15¢ VF, plus 6¢ misc. •L 3% WF, 3% PF, 3% VF, 1% Ed. F. •M 10½¢ WF, 7½¢ PF. •N 1% PF. •O 10¢ WF, 1% NECA. •P 10¢ H Ins., 7½¢ PF, 5¢ VF. •Q 2 drums; 1 drum $2.85/3.00 + 10¢ WF. •R 10¢ H & WF, 2¢ admin. 1¢ apprent. •S 10¢ H & WF, 15¢ PF. •T H & W, VF. •U 10¢ WF, 13¢ VF, 3¢ PF. •V 5½% WF, 3% PF. •W 7½¢ WF, 1½¢ Ed. F. •X 7½¢ WF, 14¢ VF. •aa 7¢ WF, 15¢ PF. •bb 8¢ WF, 2¢ advg. •dd 17½¢ WF, 20¢ PF, 10¢ PH, 5¢ Jt Bd. •ff 10¢ H & W, 5¢ PF. •gg 10¢ ins. •hh 7½¢ H & WF, 5¢ indus. prom. •ii 4% WF, 4% PF, 6 PH.

	Truck drivers 1½ T	Truck drivers 4 cy	Truck drivers + 4 cy	Tractor Operators Incl. bulldozers 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-16 cy	Power cranes & shovels ½ cy	Power cranes & shovels ¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$1.70	$1.80	$2.05	$2.70	$2.70	$2.70	$2.70	$3.225	$3.225	$2.70	$2.475	$1.77
Baltimore	1.90+7½[e]	1.90+7½[e]	2.00+7½[e,hh]	3.15/3.30 +10[e,h]	3.15/3.30 +10[e,h]	3.15/3.30 +10[e,h]	3.15/3.30 +10[e,h]	3.55/3.70 +10[e,h]	3.55/3.70 +10[e,h]	3.15/3.30 +10[e,h]	2.85/3.30 +10[e,h]	2.00+7½[e]
Birmingham	1.73	1.92[ff]	2.18[ee]	2.79	2.79	2.79	2.93	2.93	2.93	2.89	2.52	1.75
Boston	2.395[r]	[e]	[e]	3.275+10[e,d]	3.275+10[e,d]	3.275+10[e,d]	3.275+10[e,d]	3.65+10[e]	3.65+10[e]	3.275+10[e]	3.20+10[e]	2.60+7[e,ee]
Chicago	2.16+12[f,s]			3.15+5[e]	3.30+5[e]	3.20+5[e]	3.00+5[e]	3.75+5[e]	3.75+5[e]	3.25+5[e]	3.10+5[e]	
Cincinnati	2.33[ee]	2.43[ee]	2.53[ee]	3.225	3.225	3.225	3.225	3.475	3.475	3.475	3.475	3.475
Cleveland	2.625+10[e]	2.625+10[e]	2.625+10[e]	3.49	3.49	3.49	3.49	3.74	3.74	3.49	3.365	3.365
Dallas	1.625	1.625	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.625[f]	1.625/2.00[f]	1.775/2.00[f]
Denver	2.20	2.30	2.45	2.20	2.80	2.80	2.80	2.95	2.95	2.80	2.80	2.40
Detroit	2.61	2.61	2.61	3.50+10[e]	3.50+10[e]	3.50+10[e]	3.50+10[e]	3.50+10[e]	3.50+10[e]	3.50+10[e]	3.225+10[e]	2.71+25[e,ee]
Kansas City	2.23[ee]	2.23[ee]	2.305[ee]	2.425	2.925[e]	2.975[e]	2.975[e]	3.22	3.22	2.835	2.975[f]	2.35
Los Angeles	2.63+7½[e]	2.63+7½[e]	2.83+7½[e]	3.47+10[e]	3.47+10[e]	3.47+10[e]	3.56+10[e]	3.56+10[e]	3.56+10[e]	3.56+10[e]	3.274+10[e]	2.71+7½[e]
Minneapolis	2.40	2.40[e]	2.55[f]	2.78	3.00[e]		3.00	3.22[e]	3.45[e]	2.78	2.67	2.53
New Orleans	1.80	2.05	2.05	2.375+7½[e]	3.025+7½[e]	3.025+7½[e]	3.025+7½[e]	3.025+7½[e]	3.025+7½[e]	3.025+7½[e]	2.375+7½[e]	1.75
New York	2.21+22½[ee]	2.75+14[e,kk]	2.75+14[e,kk]	3.525+25[e,h]	3.525+25[e,h]	3.525+25[e,h]	3.65+25[e,h]	4.40+35[e,h]	4.40+35[e,h]	3.65+25[e,h]	3.65+25[e,h]	3.25+16[e,ee]
Philadelphia	2.215/2.35+12½[ee]			3.20½/3.95½+10[e]			3.20½/3.95½ +10[e]	3.20½/3.95½+10[e]		3.20½/3.95½ +10[e]	3.20+10[e]	2.25+10[e]
Pittsburgh	2.27+15[e,m]	2.40+15[e,m]	2.50+15[e,m]	3.23+10[e,n]	3.23+10[e,n]	3.23+10[e,n]	3.23+10[e,n]	3.42+10[e,n]	3.42+10[e,n]	3.42+10[e,n]	3.06+3.60[n]	2.25+15[e,m]
St. Louis	2.50+7½[e,ee]	2.60+7½[e,ee]	2.60+7½[e,ee]	3.45[f,ee]	3.45[f,ee]	3.45[f,ee]	3.45[f,ee]	3.45[f,ee]	3.45[f,ee]	3.45[f,ee]	2.90[f,ee]	2.90[f,ee]
San Francisco	2.55+10[e]	2.55+10[e]	2.69+10[e]	3.32+10[e]	3.32+10[e]	3.32+10[e]	3.32+10[e]	3.65+10[e]	3.65+10[e]	3.48+10[e]	2.93+10[e]	2.775+10[e]
Seattle	2.80+17½[e,ee]	2.80+17½[e,d,ee]	3.00+17½[e,ee]	3.10+20[e,ii]	3.10+20[e,ii]	3.10+20[e,ii]	3.10+20[e,ii]	3.46+20[e,ii]	3.46+20[e,ii]	3.19+20[e,ii]	2.85+20[e,ii]	2.71+10[e]
Montreal	1.40+11[e,ii]	1.40+11[e,ii]	1.40+11[e,ii]	1.60+15[e,ii]	1.83+15[e,ii]	1.83+15[e,ii]	1.83+15[e,ii]	2.09+16[e,ii]	2.09+16[e,ii]	1.83+15[e,ii]	1.70+15[e,ii]	1.70+15[e,ii]
Toronto	1.60+6[e,ii]	1.60+6[e,ii]	1.60+6[e,ii]	2.00+8[e,ii]	2.10+8[e,ii]	2.10+8[e,ii]	2.10+8[e,ii]	2.60+10[e,ii]	2.60+10[e,ii]		2.15+9[e,ii]	2.15+9[e,ii]

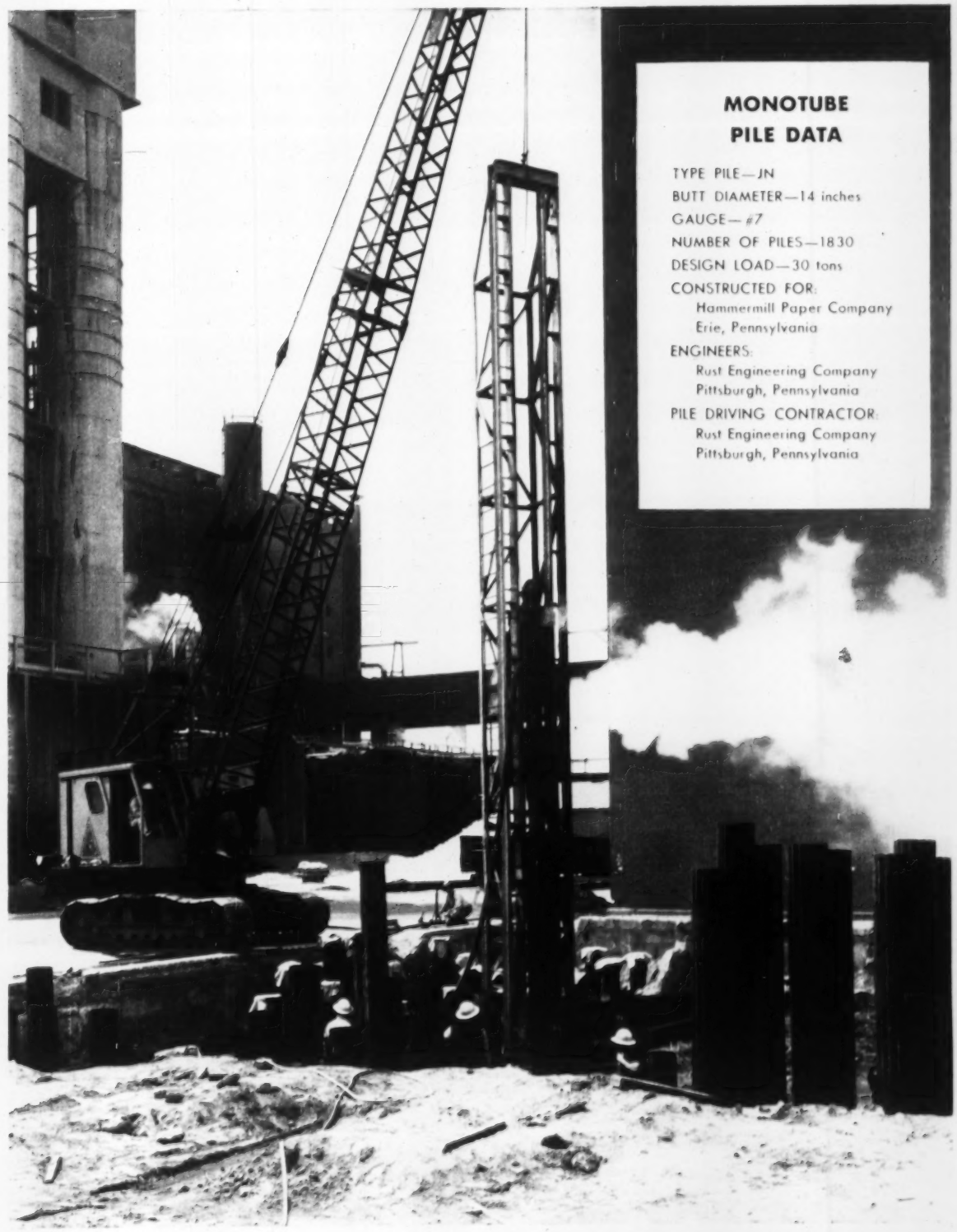
•a H & WF. •b lower rates, straight time; other broken. •c 2-axle; 10 wh. 3 axle $2.45; Euclid $2.65. •d intermediate. •e bldg contr.; highway $2.48+7¢ WF. •f less than 2-T. •g up 6 cy. •h 4% WF, 4% PF. •i 6-8 cy. •j plus $2 pd by employer for hosp. death benefits to family. •k bldg constr; steel contr $3.475. •l higher rates are union, other taken from min. wage approved by County Comm. Court. •m 10¢ H & W, 5¢ PF. •n flatbed. •o under 10 cy. •p over 10 cy. •q over 50 hp. •r blade grader. •s WF. •t single. •u incl. 10¢ H & W. •v incl. 7½¢ H & W. •w 7½¢ H & W, 5¢ PF. •x 7½¢ WF, 10¢ PF. •y to 3½ cy. •z 3½ cy & over. •aa plus W & PF. •bb 3% WF, 2% PF; plus 11 PH. •cc 11¢ WF, 11½¢ PF, 11 PH. •dd up to 5 cy. •ee 5 cy & over. •ff 1½ to 3 T. •gg up to 5 T; 5 T & over, 2.25. •hh 5¢ H & WF, 2½¢ PF. •ii 4% VF. •kk Incl. 10¢ WF. •ll FB. •mm 10¢ H & WF, 10¢ ins. 5¢ VP. •oo Plus $2.25 wk. WF. •pp 5% WF, plus 6 PH. •tt 10¢ H & WF, 10¢ PF.

MEXICO CITY PRICES

n Pesos, F.o.b. City		Sept. '57	Oct. '57
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.38	1.50
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.38	1.86
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	2.48	3.10
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.48	2.50
Struct. Iron Workers (8 hr. day) Remachadores	av. per hr.	3.77	3.77

Struct. Steel, Shapet		Sept. '57	Oct. '57
3"-15" x 12 meters	per metric ton	2100.00#	2300.00#
# fob Monterrey			
Reinf. Steel, Corr. Rods			
¼" x 11 meters	per ton	2000.00	2000.00
⅜" x 11 meters	per ton	2000.00	2000.00
½" x 11 meters	per ton	2000.00	2000.00
⅝" x 11 meters	per ton	2000.00	2000.00
¾" x 11 meters	per ton	2000.00	2000.00
1" x 11 meters	per ton	2000.00	2000.00

Gravel truck load at 3½ cu. meters		Sept. '57	Oct. '57
Blue Gravel	per tr. load	75.00	75.00
Rose Gravel	per tr. load	73.00	65.00
Cement, Std. Port. (Tolteca)	per ton	240.00	240.00
Lumber			
1" Pine	per M ft.	1400.00	1700.00
1½" Pine	per M ft.	1650.00	1900.00



MONOTUBE PILE DATA

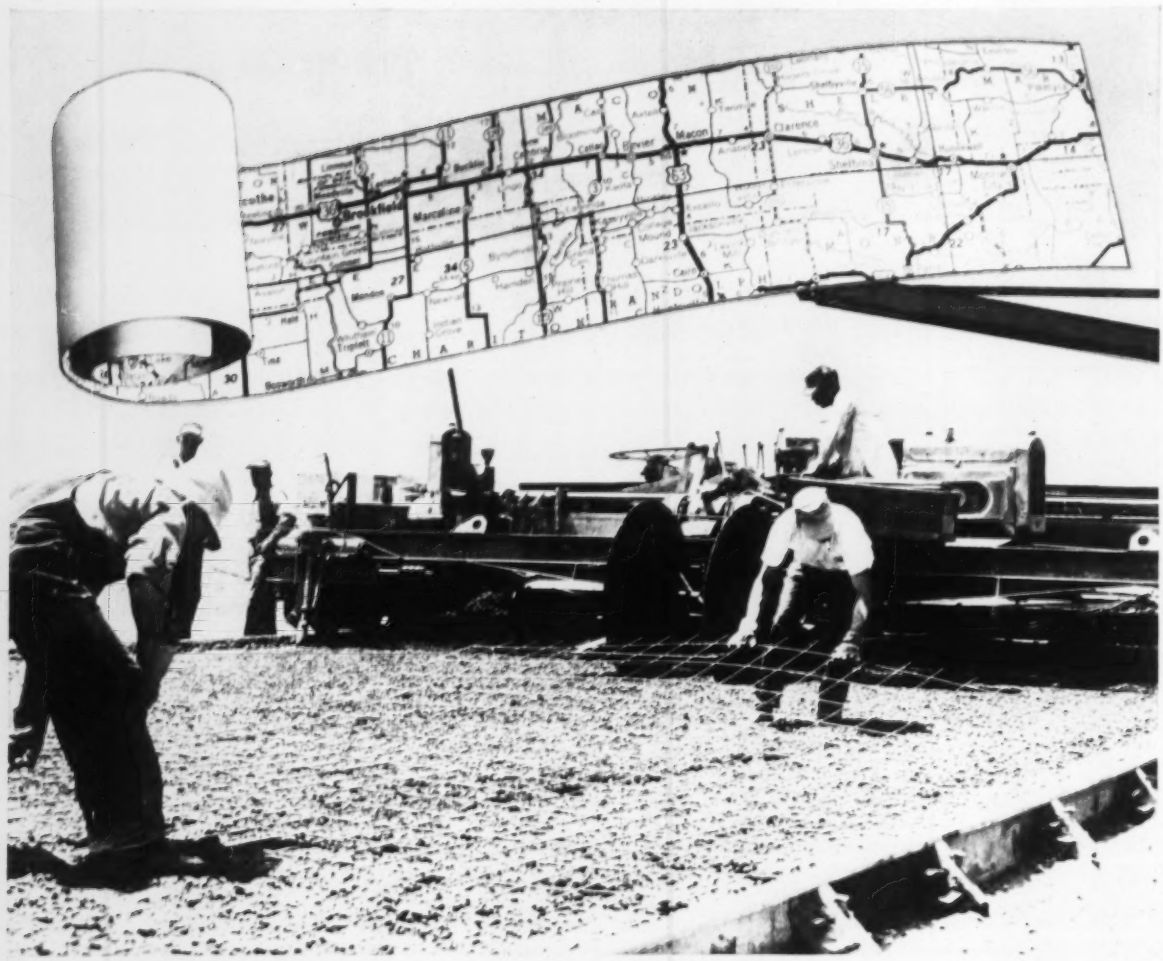
TYPE PILE—JN
BUTT DIAMETER—14 inches
GAUGE—#7
NUMBER OF PILES—1830
DESIGN LOAD—30 tons
CONSTRUCTED FOR:
Hammermill Paper Company
Erie, Pennsylvania
ENGINEERS:
Rust Engineering Company
Pittsburgh, Pennsylvania
PILE DRIVING CONTRACTOR:
Rust Engineering Company
Pittsburgh, Pennsylvania

DEPENDABILITY plus ECONOMY with Monotube piles. Fast installation of over 1800 Monotube foundation tubes is the progress report on this plant addition for Hammermill Paper Co., Erie, Pennsylvania.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. Write The Union Metal Manufacturing Co., Canton 5, Ohio, for complete information.

UNION METAL

Monotube Foundation Piles



Sheffield Is Ready For The Highway Program

SHEFFIELD

ARMCO

Steel Products for Highways

Problems of right-of-way, financing and advance engineering in the National Highway Program are being whipped faster every day. And the dirt is flying. Interstate roads contracted for in the first half of this year were double the mileage of contracts let in the first half of '56.

Sheffield steel production is geared to the speed-up. We're making fast, on-schedule delivery of Sheffield Welded Wire Fabric, Reinforcing Bars, High-Strength Bolts and Highway Fence. And we are set to increase production to keep abreast of the growing need for these steel products and others.

Sheffield's strategic plant locations and expanded production facilities offer you time-saving advantages. Specifications written to high level standards of quality are readily met with Sheffield steel products.

SHEFFIELD DIVISION ARMCO STEEL CORPORATION SHEFFIELD PLANTS: HOUSTON • KANSAS CITY • TULSA

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Cambridge**—ATHLETIC—BA 12/2—Massachusetts Institute of Technology, 77 Mass. Ave. (selected list bidders) 1st section athletic building. $1,000,000. Anderson, Beckwith & Haible, 11 Beacon St., Boston, archts. CD 3/6.

▲ **Me., Lewiston**—HOSPITAL—BA 12/9—St. Mary's General Hospital, 518 Sabattus St. (selected list bidders) hospital addn. $2,000,000. Leo P. Provost, 61 Amherst St., Manchester, N. H., archt. CD 10/2.

Mass., Burlington—SCHOOL—BA 12/9—Town, Elementary School Bldg. Comn., c/o Supt. Schools, Burlington, elementary school, Lexington St. $750,000. Plans deposit $100. Mario V. Caputo, 6 Beacon St., Boston, archt. CD 12/19.

▲ **N. H., Durham**—DORMITORY—BA 12/11—University of New Hampshire, Office President, Thompson Hall, Durham, men's dormitory on campus. $1,000,000. Plans deposit $100. Irving W. Hersey Assoc., Town Hall Bldg., archts. CD 4/12.

▲ **Mass., Boston**—PARKING GARAGE—BA 12/19—City Real Property Dpt., City Hall Annex, Boston, off-street parking garage Bedford, Kingston and Columbia Sts. Bid Type "A". $1,500,000; off-street parking garage, Bedford, Kingston and Columbia Sts. Type "B". $1,500,000. S. S. Eisenberg, 739 Boylston St., archt. CD 12/3/56.

HEAVY CONSTRUCTION—LB & CA

▲ **VERMONT**—State Hy. Dpt., State House, Montpelier. Bids opened 11/15.

E. T. O'Neil & Sons Constr. Corp., 223 Commercial St., Holyoke, Mass., LB $1,043,303, est. $1,100,000, grading, drainage, sub-base and 2.037 mi. bit. concrete and 1 span welded composite girder bridge over Clarendon River, 2 span (each 72 ft. center to center of bearings) composite WF beam bridge over Otter Creek and 1 span through plate girder RR overpass in towns of West Rutland-Rutland on US Rte. 4 beginning at point approx. 0.033 mi. westerly of intersection of Vt. Rte. 3 and U.S. Rte. 4 in West Rutland and extending easterly 2.087 mi. to point approx. 0.066 mi. easterly of intersection of Vt. Rte. 3 and U.S. Rte. 4 in Rutland. CD 10/31.

BUILDINGS—LB & CA

▲ **Aquadro & Cerruti, Inc.**, Texas Rd., Northampton, Mass., LB $1,039,698, est. $1,000,000, MARRIED STUDENT APARTMENTS (97 units), AMHERST, MASS. University of Mass., Alden C. Brett, pres. Bldg. Comm., Amherst, Mass. Bids Nov. 15. CD 11/8, under Public Bldgs.

▲ **Daniel O'Connell's Sons, Inc.**, 480 Hampden St., Holyoke, Mass., CA $1,865,163, Regional HIGH SCHOOL, near Southboro Town Line, NORTHBORO, MASS. Northboro-Southboro Regional School Dist., c/o Supt. Schools, Howard St., Northboro, Mass. Bids Nov. 7. CD 11/13, under LB.

▲ **Theodore Loranger & Sons**, 404 Nash Rd., New Bedford, Mass., LB $1,056,811, est. $1,000,000, REGIONAL HIGH SCHOOL, OAK BLUFFS, MASS. Martha's Vineyard Regional High School Dist., Martha's Vineyard, Mass. Bids Nov. 15. CD 10/25.

Louis Schoolnick Constr. Co., 49 Garden St., Hartford, Conn., CA $660,000. 2 story, 83,422 sq. ft. SHOPPING CENTER, N. Main St., Bishops Corner, WEST HARTFORD, CONN. Morton Realty Co., 326 N. Main St., West Hartford, Conn. Awarded Nov. 14. CD 1/29.

Hope Development Corp., 1931 Mott Ave., Far Rockaway, N. Y., CA $575,000. 60-unit garden type APARTMENT, Hope St., STAMFORD, CONN. Herman Glickman, 99 Willow Rd., Woodmere, N. Y. Schurman & Lichtenstein, 369 Lexington Ave., New York, N. Y., archts. Awarded Nov. 14.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **Pa., Harrisburg**—UNDERGROUND PARKING GARAGE—BA 12/18—General State Auth., 18 and Herr Sts., underground parking garage, 2 levels plus surf. parking on roof. Capitol Park Extension area, $2,500,000. Plans deposit $25 each contract. Lacy, Atherton & Davis, 1729 North Front St., archts.

BUILDINGS—BA

▲ **Pa., Norristown**—HOSPITAL—BA 12/3—The Ballinger Co., archts., 1625 Race St., Phila., hospital addn. for Montgomery Hospital. $2,000,000. CD 10/8.

▲ **Pa., Parkland**—SCHOOL—BA 12/5—State School Bldg. Auth., 1015 25 St., Harrisburg, Junior High School Bldg. for Middletown Twp. School District. Plans deposit $60. Haag & d'Entremont, 400 Cedar St., Jenkintown, archts. CD 3/8/56.

HEAVY CONSTRUCTION—LB & CA

▲ **Frederick Snare Corp.** 233 Broadway, New York 7, N. Y., CA $1,798,100, Contr. BP-160.012, New Pier 10 substructure and deck, Brooklyn-Port Authority Piers, BROOKLYN, N. Y. The Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Nov. 12. CD 11/14, under LB.

Nesto Constr. Co., 100 Riverside Ave., Newark, N. J., CA $689,266 (5 bidders), constr. pavement and utilities for Bldgs. Nos. 191, 192, 193 and 194, Contr. PN-420.006, PORT NEWARK, N. J. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Oct. 15. CD 10/18.

▲ **Baylor Constr. Co.**, 210 East 40 St., New York, N. Y., LB $1,169,000, est. $2,000,000, sewage treatment plant, RIDGEWOOD, N. J., Village, Village Hall, Ridgewood, N. J. Bids Oct. 29. CD 10/18.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg.

Pa.—**Central Pa. Quarry Stripping & Constr. Co.**, 270 S. Pine St., Hazelton, Pa. CA $2,587,727, 8,840 ft. divided hy. crushed aggreg. base with bit. 5 bridges, L. R. 740 (18) City of Scranton, Dickson, City Boro, Lackawanna Co.;

Pa.—**Gasparini Excavating Co.**, 1439 Main St., Pecksville, Pa., CA $2,014,042, 10,160 ft. divided hy. crushed aggreg. base with bit. 4 bridges, L. R. 70 Section 1A, Dunmore and Throop Boros, Scranton City, Lackawanna Co. Bids Sept. 27. CD 10/14, under LB.

Centriline Corp., 140 Cedar St., New York 6, N. Y., CA $635,959, Bid 2913, water mains in various sections of PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa., Bids Oct. 29, CD 11/12, under LB.

Nickles Bros., Inc., 4716 Baltimore Ave., Hyattesville, Md., CA $616,921 (base bid) grading, sewer and water mains, Military Rd. and Missouri Ave., 13 to 27th Fed. Aid Proj. U-49 (2) WASH., D. C. D. C. Govt., Dpt. Hys., 499 Pa. Ave. N. W., Wash., D. C. Bids Oct. 2, awarded Nov. 6. CD 10/9.

BUILDINGS—LB & CA

▲ **Christo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y., LB $1,642,000 (9 bidders) general construction, PUBLIC SCHOOL 286, Haring St. and Ave "Y" BROOKLYN, N. Y. Bd. Educ. Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Nov. 14. CD 10/15.

▲ **Laurence J. Rice, Inc.**, 61-40 Maurice Ave., Maspeth, N. Y., CA Est. $1,800,000, Mother Butler HIGH SCHOOL for Marymount, Pelham Parkway and Eastchester Rd., NEW YORK, N. Y. Archdiocesan Bldg. Comn., 451 Madison Ave., New York 22, N. Y. Bids Nov. 6. Eggers & Higgins, 100 E. 42 St., New York 17, N. Y., archts. CD 2/13.

▲ **Weny Brothers & Storms Co.**, McLean Blvd. and 9th Ave., Paterson, N. J., CA Est. $2,500,000, 1 story DISTRIBUTION CENTER, 9 acre tract, Brighton Rd., CLIFTON, N. J. Chas. Pfizer & Co., Inc., 11 Bartlett St., Brooklyn, N. Y. CD 11/1.

Daniel Van Campen, 2538 W. Oxford St., Phila., Pa., CA $764,987, Elementary SCHOOL, 18 St. and Snyder Ave., PHILA., PA. Bd. Educ., 21 and Winter Sts., Phila., Pa. Bids Oct. 18. CD 10/25, under LB.

▲ **National Constr. Co.**, c/o owner, CA $5,000,000 RESIDENTIAL DEVELOPMENT, Country Broad St. and Columbia Ave. Club Rd., etc., PHILA., PA. Wynnefield Heights, Inc., c/o Mr. Kane, Hardt Bldg., Phila., Pa.

Skinker & Garrett, Inc., 2607 Connecticut Ave. N. W., Wash., D. C., CA $629,347 (10 bidders) constr. VISITATION BLDG. (referred to as Science Bldg.) WASH. D. C. Georgetown Visitation Convent Preparatory School, 150 35th St., N. W., Wash., D. C. Bids Oct. 30, awarded Nov. 13. CD 10/9.

International Latex Corp., Dover, Del., rejected bids general contract LABORATORY BLDG., DOVER, DEL., LB $825,000. Will re-advertise. CD 11/12, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**
PROPOSED WORK	
Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

HEAVY CONSTRUCTION—BA

▲ **Ala., Decatur**—BA 12/12—City, City Hall, Contr. A, interceptor sewers and force mains $1,000,000, Contr. B, 5.4 m.g.d. sewage treatment plant and sewage pumping station $750,000. Polglaze & Basenberg, 812 S. 27th St., Birmingham, engrs. CD 5/1/56.

▲ **Tenn., Nashville**—AIR TERMINAL—BA 1/8—City, City Hall, V-shaped, double concourse air terminal with 10 loading positions to handle flights of 7 airlines, with 600 car parking. $3,000,000. CD 10/4.

HEAVY CONSTRUCTION—LB & CA

▲ **R. R. Richardson & Co.**, 25th and Newport Ave., Norfolk, Va. LB $1,918,000. (7 bidders) Contr. 1, 2 story addn., 1 story addn., alterations, etc., Norfolk Municipal Airport, incl. access road, airside parking, aprons, NORFOLK, VA. Norfolk, Port Auth., Bd. Trade Bldg., Norfolk, Va. Bids Nov. 14. CD 10/24.

Ames & Webb, Inc., 3145 Virginia Beach Blvd., Norfolk, Va. LB $148,209. (6 bidders) Contract 2 (Norfolk, Va.)

▲ **FLORIDA**—State Hy. Dpt., Tallahassee.

Brooks Paving Co., Inc., 5607 N.W. 27th Ave., Miami, Fla. CA $716,587, rock base with b. conc. binder course, resurf. existing lanes with b. conc. with binder course, 5.121 mi. SR No. 5, Fed. Aid Proj. F-003-5 (Job. No. 7001-207) Brevard Co. Bids Oct. 24, awarded Nov. 12. CD 10/29, under LB.

Traylor Bros., Sta. B, P.O. Box 66, Evansville, Ind., LB $972,000 est. $1,100,000 (12 bidders), Contract No. 226-E-Ohio River Interceptor Sewer-Section E, involving 4,200 ft. 8 in. sewer, 1,000 ft. tunnelling, LOUISVILLE, KY. Metropolitan Sewer Dist., 412 W. Market St., Louisville, Ky. Bids Nov. 14. CD 10/10.

BUILDINGS—LB & CA

▲† **Phillips Constr. Co.**, 308 W. Palmer St., Charlotte, N. C., LB $8,447,000, 600 unit Capehart HOUSING with roads, paving and utilities, Charleston Air Force Base, North Charleston, Inv. 49-605-58-ICH, CHARLESTON, S. C. U. S. Air Force, Military Air Transport Service, Charleston Air Force Base, North Charleston, S. C. Bids Nov. 14. CD 9/23.

Robert Angelle, Breaux Bridge, La. CA $649,930, est. $500,000. 1 story, brick, white HIGH SCHOOL and 2 story Negro HIGH SCHOOL, ELEMENTARY SCHOOL addns., WELSH, LA. Jefferson Davis Parish School Bd., Jennings, La. Bids Nov. 7, awarded Nov. 9. CD 10/15.

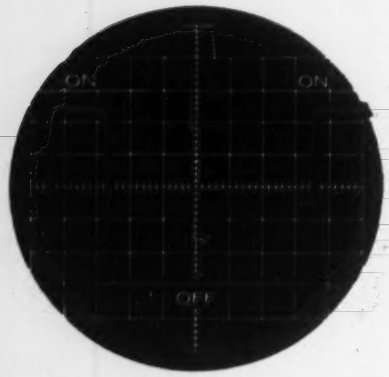
MIDDLE WEST

BUILDINGS—BA

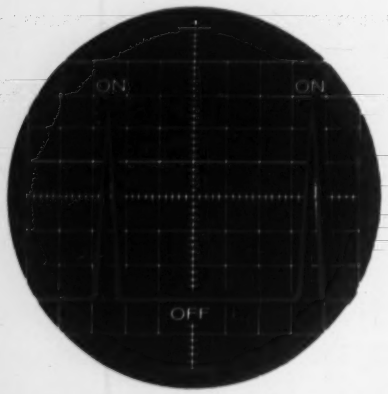
▲ **Mich., Oak Park**—SCHOOL—BA 12/5—Bd. Educ. School Dist. No. 3, Frac, Abraham Brickner, secy., 22000 Kipling St., elementary school Northend and Parklawn Sts. $1,000,000. Plans deposit $50. O'Dell, Hawlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, archts. CD 8/22.

▲ **O., Macedonia**—HOSPITAL FACILITIES—BA 12/11—State Dpt. P. Wks., State Dpt. Bldgs., Columbus hospital at Hawthnedonn State Hospital for Opt.

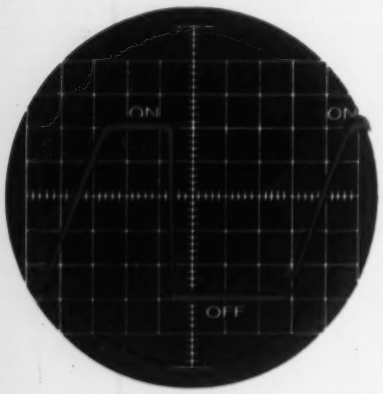
(Continued on page 71)



Visi-flash PATTERN. Note squared corners on the pattern produced. Visi-flash is instantly "on"; instantly "off" . . . no light variance, no excessive battery drain. "Off" time is set at optimum length . . . assures a pause long enough to rest the eye and make next flash meaningful.



NEON TUBE PATTERN. The Oscilloscope graphically illustrates "on" and "off" pulses of the light. It shows here that the neon tube flasher has an extremely short "on" time . . . too brief and fast to register strongly on eye and mind.



ORDINARY TRANSISTORIZED CIRCUIT PATTERN. Here, the "on" and "off" timing is not at ideal setting. Angled pattern shows that light strength varies and that excessive drain is set up on batteries as current slowly heats bulb prior to each flash.

Only DIETZ Visi-flash gives LONGER "On and Off" Timing for STRONGER Warning

ACCIDENT RECORDS indicate that rapidly flashing warning lights are seen, *but not heeded*. That's due to the fact that the human eye retains an impression of a flash from 1/50 to 1/30 of a second after it has vanished. If the flashes are rapid enough, the eye may imagine it sees a succession of diminishing flickers that are not there. The result is confusion, not action.

Only a long, steady flash registers a meaningful warning on the human mind. *Only a longer "off" time* enables the human eye to recover from one flash and see the next one clearly. The Dietz Visi-flash is timed to give the most ideal "on" and "off" timing of any flashing signal on the market.

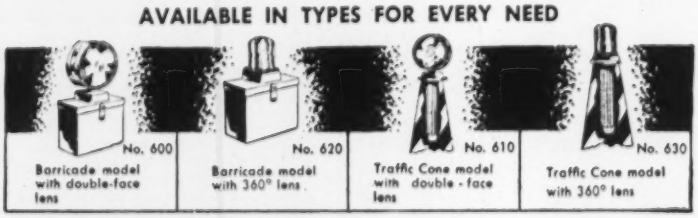
◀ **For Proof, See the Oscilloscope Patterns at Left**

DIETZ ENGINEERS have skillfully balanced the "on" and "off" timing of the Visi-flash with the design, color and area of the lens to produce a warning light that says "STOP – DANGER" in a way that combines visibility with meaning and authority.

Visi-flash is

- Highly visible
- Easy on Batteries
- Shock resistant
- Weather proof
- Easier to maintain
- Longer lasting
- Lower in cost

AVAILABLE IN TYPES FOR EVERY NEED



Go **DIETZ** *and you go Safely*

R. E. DIETZ CO. **SYRACUSE 1, N. Y.**

(Continued from page 69)

Mental Hygiene & Correction. $1,000,000. CD 12/19/55, under O. Dpt. Mental Hygiene & Correction, as owner.

Ind., Madison—HOSPITAL—BA 12/12—Bd. P. Wks. & Supply, 301 State House, Indianapolis, repair fire loss and general remodel masonry, heavy timber and bar joist, Madison State Hospital. $400,000. J. M. Rotz Eng. Co., 1919 N. Meridian St., Indianapolis, mechanical engr. McGuire & Shook, 1400 Fletcher Trust Bldg., Indianapolis, archts. CD 8/30/56.

▲ **O., Tiffin**—HOSPITAL—BA 12/12—Ohio Dpt. P. Wks., State Depts. Bldg., Columbus, medical and surgical unit addn., Tiffin State Hospital, for Dpt. Mental Hygiene & Correction. $1,500,000. Plans deposit $20. Thurman J. Peabody, 407 Citizens Natl. Bank Bldg. Norwalk, archt. CD 12/17/52.

▲ **Ill., Chicago**—PARKING—BA 12/13—City, City Hall, two 2 level rein.-con. structures and ramps, open walls, concrete pavement, sidewalks and concrete piling, parking facilities, 6331-43 N. Maplewood and 6330-42 N. Campbell Ave. $1,200,000. CD 5/4/56.

▲ **Mich., Jackson**—HOSPITAL—BA 12/16—City, Bd. Managers Foote Hospital, 205 North East Ave., W. A. Foote Memorial Hospital Addn. $2,000,000. Plans deposit $50. Smith, Hinchman & Grylls Assoc., Inc., 800 Marquette Bldg., Detroit, archt. CD 4/24.

Mich., Ypsilanti—DRAMATIC ARTS—BA 12/17—State Bd. Educ., Dr. Lynn M. Bartlett, secy., Capital Bldg., Lansing; Daniel L. Quirk Jr. Dramatic Arts Bldg., Eastern Michigan College $650,000. Smith, Hinchman & Grylls Assoc., Inc., 800 Marquette Bldg., Detroit, archt. CD 9/19.

▲ **Wis., Appleton**—SCHOOL—BA 12/17—Bd. Educ., 2 story, H-shaped, 350x360 ft. elementary school. $1,000,000. Plans deposit $50. George Narovec, 520 E. Wisconsin Ave., archt. CD 8/1.

▲ **Wis., Superior**—LABORATORY SCHOOL, etc.—BA 12/19—State Colleges Bldg. Corp., Madison, 3 story, bsmnt., 71x166 ft. laboratory school and 1 story, 172x412 ft. service bldg. $1,750,000. Plans deposit $25. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, engrs. CD 11/1/55.

BUILDINGS—SLC

▲ **Ind., Fort Wayne**—DEPARTMENT STORE—Office A. Epstein & Sons, Inc., engr.-archt., 2011 W. Pershing St., Chicago, Ill., soon lets contract. 3 story, 150 x 355 ft. rein.-con. and masonry department store for Wolf & Dessaver, 923 S. Calhoun St. $3,500,000.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Dpt. Hys., Columbus, Zone 15. Bids opened 11/12.

O.—**Maxon Constr. Co.**, 2600 Far Hills Ave., Dayton, O., LB $4,298,136, est. $4,826,200 (14 bidders) Type T-71 and structure 5.139 mi. SR 1-12.38, 0.00 I-1105 (27), Ashland and Wayne Counties;

O.—**Sutton & Stewart, Inc.**, 841 National Rd., Bridgeport, O., LB $204,288, est. $121,400 (only bidder) Type T-71 0.111 mi. US R. 40-(27.95-28.00) F-610 (17), Belmont Co.;

O.—**Union Bridge Co., Inc.**, P.O. Box 62, Mt. Liberty, O., LB $87,383, est. $100,600 (11 bidders) Type T-35 and structures 0.115 mi. SR 188-14.89, US-1237 (1), Fairfield Co.;

O.—**Smith Constr. Co. of Ohio**, P.O. Box 515, Vienna, O., LB $194,353 Part No. 1, est. $199,200; LB $1,013,659 Part 2, est. $1,011,800; LB $1,208,012, est. $1,211,000 Combination 1 and 2 (3 bidders) Type T-35, 10.151 mi. USR 322-17.82 (0.00-5.17) (5.38-8.01) 19.63, Part No. 1 F-489 (9), F-489 (8) Part No. 2, Geauga and Ashtabula Counties;

O.—**Kramer Brothers**, Route No. 1, Eaton, O., LB $108,958, est. $123,600 (6 bidders) Type T-35 and B-119 and structure 0.826 mi. SR 726-2.22, S-1233 (1), Preble Co.;

O.—**Blazer & Wright, Inc.**, Box 174, Cheshire, O.: LB $305,425, est. $356,900 (5 bidders) Type T-35 on B-20, 1.942 mi. SR 556-11.24, Monroe Co. CD 11/7.

▲† **The Great Lakes Dredge & Dock Co.**, Williamson Bldg., Cleveland 14, O., CA $1,538,350, maintenance dredging in Cuyahoga River, Cleveland, OHIO. U. S. Eng., Engineer Park, Buffalo, N. Y. CD 10/9, under LB.

▲ **Square & Marra Constr. Co.**, 4990 Massachusetts Ave., Indianapolis, Ind., LB $1,473,000 (6 bidders), 1st section of North Keystone storm sewer, INDIANAPOLIS, IND. Bd. Sanitation, 421 Pennsylvania St., Indianapolis, Ind. Bids Nov. 8. CD 10/16.

Vogel Constr. Co., 3760 E. St. Clair St., Indianapolis, Ind., CA $729,194, 2nd section of W. Kessler storm sewer, 14th St., INDIANAPOLIS, IND. Bd. Sanitation, 421 Pennsylvania St., Indianapolis, Ind. Bids Nov. 8. CD 10/16.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield, Ill.—**Maclair Asphalt Co.**, 6000 Collinsville Rd., East St. Louis, Ill., CA $731,510, concrete resurf. 2.66 mi. F.A. 4 near Hartford, Madison Co. Bids Nov. 1, awarded Nov. 14;

Ill.—**Triangle Constr. Co.**, 480 N. Evergreen, Kankakee, Ill., CA $510,013, resurf. streets in city of Cairo, Alexander Co. Bids Nov. 1. CD 11/8, under LB.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Springfield,

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., CA $1,478,384, 3 span WF grade separation N.W. Expressway and Western Aves., Chicago, Cook Co. Bids Nov. 1, awarded Nov. 14. CD 11/8, under LB.

▲ **ILLINOIS**—State Dpt. P. Wks. & Bldgs., Div. Hys., Springfield,

H. H. Hall Constr. Co., and Fruin-Colnon Co., 211 S. 15 St., East St. Louis, Ill., CA $2,623,682, 19 span steel grade separation, FA 1-7 at East St. Louis, St. Clair Co. Bids Nov. 1, awarded Nov. 14. CD 11/7, under LB.

Tierney & Bulow, 311 Jefferson St., Lockport, Ill., LB $495,000, channel, excavation and widening from N. of Division St. Bridge to discharge point, at main channel at Lockport lock, CHICAGO AND LOCKPORT, ILL. Metropolitan Sanitary Dist. of Greater Chicago, 100 E. Erie St., Chicago, Ill. CD 9/13.

† **U. S. Eng., Procurement Office**, Bldg. 600, Truax Field, rejected bids Sept. 23, installing incinerator and enclosure within the security fence, Sage Area, Truax Field, I.F.P. 47-602, MADISON, WIS. CD 9/10.

MICHIGAN—State Hy. Dpt., Escamaba, Bids opened 11/13,

Mich.—**Thornton Constr. Co.**, Hancock, Mich., LB $563,250, aggreg. base course with prime and double seal 5.872 mi. M-35 from Lake Mineeast SS66041 C1-R (S 306 4), Ontonagon Co.;

Mich.—**I. L. Whitehead Co.**, Sault Ste. Marie, Mich., LB $281,747, aggreg. base course with prime and double seal 5.908 mi. M-129, SS-17071 C1-R (S 17 7) SS 49071 C1-R (S 17 7) Mackinac and Chippewa Counties. CD 10/29.

▲ **Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill., CA $1,536,850, Contr. No. 6, intercepting sewer, Howard St., Niles, CHICAGO, ILL. Metropolitan Sanitary Dist. of Greater Chicago, 100 E. Erie St., Chicago, Ill. Bids Oct. 31. CD 11/4.

▲ **MICHIGAN**—State Hy. Dpt., John C. Mackie, comr., Stevens T. Mason Bldg., Lansing,

Mich.—**Louis Garavaglia**, 24240 Mound Rd., Center Line, Mich., CA $2,251,833, est. $2,290,000, bascule bridge and approaches 1 mi. north of Saginaw, BI B 1 of 73-27-13 C2-UN (I 07-2 16), Saginaw Co.;

Mich.—**Jutton-Kelly Co., W. J. Storen Co. and Cooke Contracting Co.**, 1116 Penobscot Bldg., Detroit, Mich., CA $1,669,452, est. $1,890,000, 3 bridges to carry Harper Ave., Concord Ave. and N.Y.C. R.R. tracks over Edsel Ford Expressway, Detroit, BI B59 of 82-22-10 C2-UO (I 09-1 13) BI 82024 C5 UO (I 09-1 49) BI B62 of 82-22 10 C2-UO (I 09-24) BI X13 of 82-22 10 C2-UO (I 09-1 12), Wayne Co. Bids Nov. 6. CD 11/13, under LB.

Barney Massa Constr. Co., 4925 Avondale St., Fort Wayne, Ind., CA $684,296, 20,827 ft. storm sewers and roadway, Francis Kent and Linwood High storm sewers, JACKSON, MICH. City, Lloyd Head, purch. agt., Jackson, Mich. Bids Oct. 22. CD 11/8, under LB.

BUILDINGS—LB & CA

Drose Constr. Co., 5431 Hotzell, Cincinnati, O., CA $768,865, WHITTIER SCHOOL, Hawthorne Ave., CINCINNATI, O. Bd. Educ., 608 E. McMillan St., Cincinnati, O. James Allen, 914 Main St., Cincinnati, O., archt.-engr. Bids Oct. 29, awarded Nov. 11. CD 11/7, under LB.

R. Ansen Constr. Co., 2646 N. Moreland Blvd., Cleveland, O., LB $437,000, 5 story addn. to Cleveland Receiving HOSPITAL, CLEVELAND, O. Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, O. Bids Nov. 20. CD 10/22.

▲ **Baker & Coombs Constr. Co.**, 601 E. Rockaway Ave., P. O. Box 635, Morgantown, W. Va., LB $1,995,700, general contract; Project No. 1, CENTRAL RECEPTION and CLASSIFICATION CENTER addn. to Juvenile Diagnostic Center, COLUMBUS, O. Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, O. Bids Nov. 13. CD 10/23.

Gesling Co., Lancaster, O., LB $602,800, plumbing and heating work (Columbus, O.).

▲ **Persun Constr. Co.**, 604-7th Ave., Huntington, W. Va., CA Est. $1,348,000, 2 story, full bsmt., 83x104 ft. SERVICE PLANT, IRONTON, O. Ohio Bell Telephone Co., 750 Huron Rd., Cleveland 15, O.

▲ **B & B Constr. Co.**, 1616 Covington St., Youngstown, O., LB $1,600,000-$2,000,000. 20-unit SHOPPING CENTER to be known as Marion Shopping Center, Inc., Rte. 94, MARION, O. Wm. & W. M. Cafaro & Assocs., 1616 Covington St., Youngstown, O. CD 9/24/56, under Marion Shopping, Inc., Carl Glickman, pres., as owner.

▲ **Knowlton Constr. Co.**, 1133 Columbus Ave., Bellefontaine, O., LB $1,083,500, general contract BUSINESS ADMINISTRATION BLDG., Miami University, OXFORD, O. Ohio Dpt. P. Wks., 705 Ohio Dpts. Bldg., Columbus, O. CD 11/2/56.

Hubert Rust Constr. Co., 34 Johnny Cake Rd., Painesville, O., CA Est. $400,000, 30,000 sq. ft., brick, aluminum FACTORY, PAINESVILLE, O. Coe Mfg. Co., 609 Bank St., Painesville, O. Green-Smith Assoc., 71 E. Wash., Painesville, O., archts. CD 2/25.

▲ **BuCarey Constr. Co.**, 22076 Westchester St., Cleveland 22, O. Own Forces. $4,000,000. 70 HOMES, Gates Mills Blvd., Lander Rd. and Fairmount Blvd., PEPPER PIKE, O. Marie R. Immorio, A.I.A., c/o owner, archt.

F. A. Wilhelm Constr. Co., 3914 Prospect St., Indianapolis, Ind., CA Est. $540,000. WAREHOUSE and OFFICE, 3145 Nebraska Ave., TOLEDO, O. Walding, Kinnan & Marvin, 332 Summit Ave., Toledo, O. CD 10/3.

▲ **F. A. Wilhelm Constr. Co.**, 3914 Prospect St., Indianapolis, Ind., LB $1,292,897 (8 bidders), 124x172 ft. brick, Indiana limestone, granite masonry blocks, steel, etc. Eppley AUDITORIUM, ground and first

(Continued on page 73)

Famous Builders CANNOT Make Mistakes

Famous Barr Dept. Store St. Louis, Mo.	Owens-Corning Fiberglas Plant Kansas City, Mo.
Thompson Products Co. Cleveland, Ohio	Sears-Roebuck Store Houston, Texas
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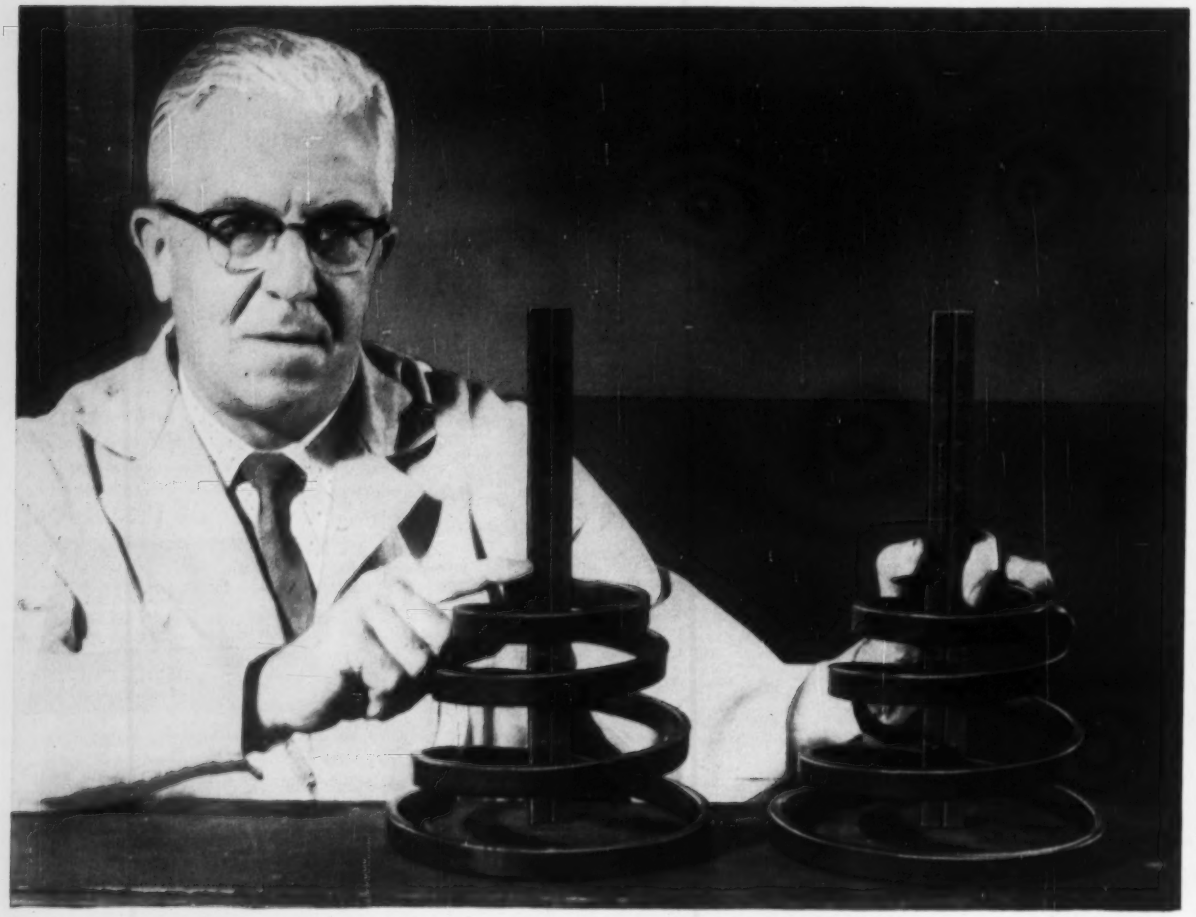

These Clutch Springs Look Alike, But . . .

One's as springy as a mountain goat, the other limp, soggy and faded.

Clutch springs, like people, grow tired under heat. They become limp and *faded*. The term "fade" means loss of spring pressure. That reduces the torque capacity of the clutch. The clutch begins to slip. Its life is reduced by 20 to 30 percent.

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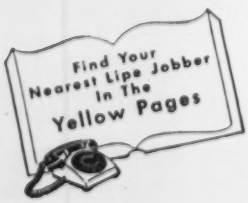
Look for this red and white Factory Seal when you take delivery on a Lipe Guaranteed Clutch for replacement service. It is your assurance of long, trouble-free life and *big* long-run savings!

SEND FOR OUR FREE "Clutch Facts" Booklet

Tells how to get more life from your heavy-duty clutches and what to look for when replacing them.



LIPE ROLLWAY

Lipe-ROLLWAY CORPORATION
SYRACUSE 1, N. Y.

(Continued from page 71)

floor, balcony, on Academy campus, CULVER, IND. Culver Educational Foundation, Culver Military Academy, Culver, Ind. Bids Nov. 12. CD 10/28.

Carl M. Geupel Constr. Co., 1919 N. Meridian St., Indianapolis, Ind., CA $800,000. PLANT addn., INDIANAPOLIS, IND. Stokely Van Camp Co., 941 N. Meridian St., Indianapolis, Ind. D. A. Bohlen & Sons, State Life Bldg., Indianapolis, Ind., archts.

▲ F. H. Peavey & Co., Paul C. Christensen, ch. engr., c/o Russell-Miller Milling Co., 145 W. Broadway, Alton, Ill., Separate Contracts, $1,500,000, slip form constr. concrete GRAIN ELEVATOR of 1,000,000 bu. plus capacity, ALTON, ILL. McKenzie, Hague & Gilles Co., Flour Exchange Bldg., Minneapolis, Minn., engr. and builder.

Carl E. Erickson Co., 4657 N. Ravenswood Ave., Chicago, Ill., CA $750,000, 4th and 5th floors, HOSPITAL addn., CHICAGO, ILL. Augustana Hospital, 409 W. Dickens Ave., Chicago, Ill. Schmidt Garden & Erickson, 104 S. Michigan Ave., Chicago, Ill., archts.

▲ Lloyds Bldrs., Inc., 61 W. Superior St., Chicago, Ill., CA $2,500,000, 20 story APARTMENT, 26-34 E. Elm St., CHICAGO, ILL. Owner, c/o Leonard H. Lawrence, 1036 N. Dearborn St., Chicago, Ill. CD 4/10.

▲ Campbell Lowrie Lautermilch Corp., 400 W. Madison St., Chicago, Ill., CA $5,000,000. 1 and 2 story, 500,000 sq. ft., brick RESEARCH CENTER w/s of County Line Rd. between Plainfield and Joliet Rds., HINSDALE, ILL. International Harvester Co., 180 N. Michigan Ave., Chicago, Ill. Bids Nov. 4. CD 10/14.

Mazzuco Constr. Co., 4 E. Clinton St., Joliet, Ill., CA $850,000. 1, 2 and 4 story, brick HOSPITAL addn., JOLIET, ILL. Silver Cross Hospital, 600 Walnut St., Joliet, Ill. Schmidt, Garden & Erickson, 104 S. Michigan Ave., Chicago, Ill., archts.

▲ Jos. P. Jansen Co., 5376 N. Teutonia Ave., Milwaukee, Wis., CA Est. $1,250,000, general contract SHOPPING CENTER, Bradley Village, BROWN DEER (P.O. MILWAUKEE), WIS. Milwaukee Shopping Center, 749 N. 2 St., Milwaukee, Wis. Bids Sept. 20. CD 9/18.

▲ Chas. D. Smith & Son, Inc., Highway 23 East, Fond du Lac, Wis., CA Total Est. $1,000,000, general contract 1 story, 53x203 ft. FACTORY addn., RIPON, WIS. Speed King, Div. of McGraw-Edison Co. Sanstedt & Knoop, 22 Otter St., Oshkosh, Wis., archts. CD 10/24;
Westra Constr. Co., Waupun, Wis., CA 1 story, 120x140 ft. steel WAREHOUSE addn. (Ripon, Wis.).

▲ Jezo Constr. Co., 1909 S. 74 St., West Allis 14, Wis., CA Est. $2,000,000, general contract 1 story, ground floor, 307x388 ft. HIGH SCHOOL, WAUWATOSA, WIS. Wis. Synod Luther High School, 1859 N. 13 St., Milwaukee, Wis. Bids Oct. 3. CD 9/23.

▲ O. W. Burke Co., 1032 Fisher Bldg., Detroit, Mich., LB $11,590,000, est. $14,000,000. Contract MH-52-C, superstructure EXHIBIT BUILDING and PARKING GARAGE, DETROIT, MICH. City, Frank G. Schomanske, pres. Civic Center Comn., City Hall, Detroit, Mich. Bids Nov. 6. CD 9/13.

▲ Fairgrove Building Co., 12-Mile Rd. and Balmoral Way, Franklin, Mich., Owner Builds. $2,880,000. 80 brick, custom HOUSES, Brook Hill Estates, FRANKLIN, MICH.

▲ Northview Constr. Co., 10419 Fenkell St., Detroit, Mich. Owner Builds. $1,200,000, HOUSING DEVELOPMENT, Venoy St., Cherry Hill Section, GARDEN CITY, MICH.

▲ Ross-Hill Realty Co., 19470 Grand River St., Detroit, Mich., Owner Builds, $2,000,000. HOUSES, Terrance Park, Harrison and Five-Mile Rd., LIVONIA, MICH.

▲ Peerless Building Co. & Dayton Building Co., 14900 Wyoming St., Detroit, Mich., CA $4,300,000. 233 brick HOMES, Greenwiche Pointe, LIVONIA, MICH. Harry Sosnick, 14900 Wyoming St., Detroit, Mich.

▲ Etkin Constr. Co., 10111 Capital, Oak Park, Mich., CA $2,100,000. Owner Builds. 130 brick HOMES, "Park Estates", Parklawn, Northend, Church and Cloverdale, OAK PARK, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 17 South Dakota — December 19 Montana

STREETS AND ROADS

December 5 Kansas, Nevada — December 10 Kansas
December 17 South Dakota

▲ Minn., St. Paul—BA 12/3—City, O. P. Simon, Jr., city purch. agt., 253 City Hall, constr. Battle Creek trunk sewer and branches. $1,750,000. A. W. Tews, city engr. Toltz, King, Duvall, Anderson & Assocs., 1509 Pioneer Bldg., consult. engrs. CD 12/11/56.

Neb., Beatrice—BA 12/9—City, City Hall, sewers and sewage plant. $581,040. Henningson, Durham & Richardson, 2962 Harney St., Omaha, engrs. CD 7/26.

▲† Kansas—BA 12/17—U. S. Eng., Federal Office Bldg., Kansas City 6, Mo., spillway at Turtle Creek Dam and Reservoir on Big Blue River, near Manhattan, 66-ENG-23-028-58-25. $7,000,000. Extended date. CD 10/31.

(Continued on page 75)

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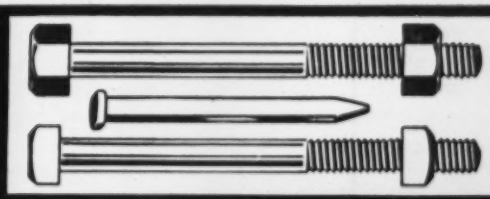
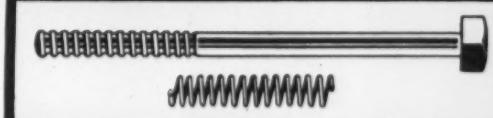
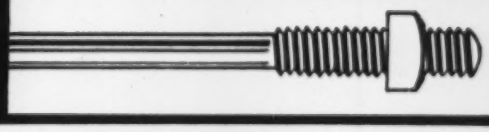




BOLTS, SCREW ANCHORS, TIE RODS, UPSET RODS, STRAPS, WASHERS, STAPLES, DOCK SPIKES, MANHOLE HARDWARE, ETC.



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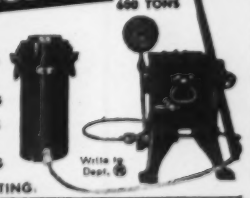

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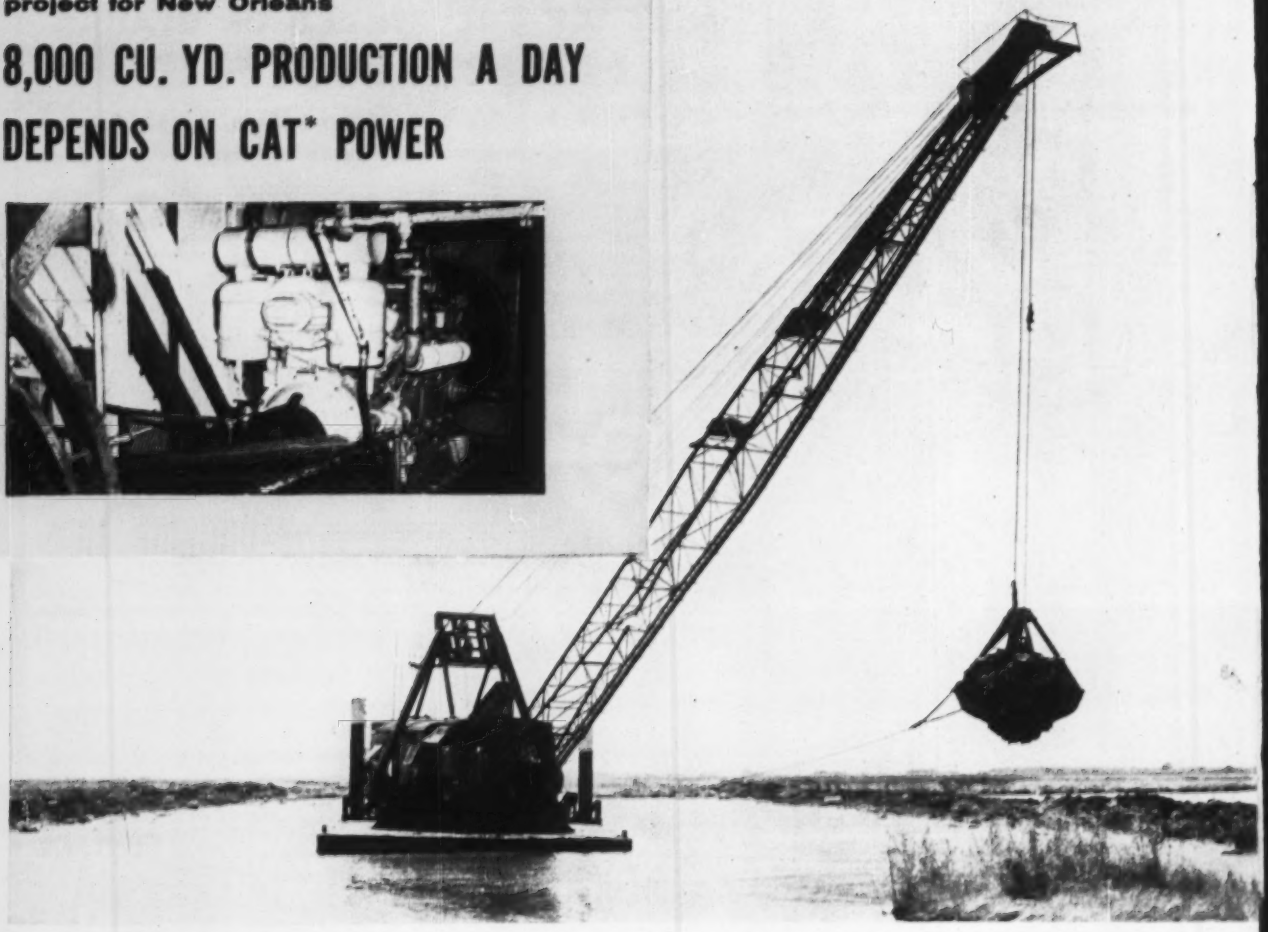
On the South Point-Mischoud Levee project for New Orleans

8,000 CU. YD. PRODUCTION A DAY DEPENDS ON CAT* POWER



Here you see a dredge owned by the Great Lakes Dredge & Dock Co., at work on a project near New Orleans. It is digging a canal 55 ft. wide and about 8 ft. deep for the base of a 15-mile levee. Running from South Point Bayou to Mischoud Levee, this canal will permit the expansion of New Orleans eastward. The engine that powers the barge's clamshell is a Cat D397 Diesel. 8,000 cu. yd. production a day depends on this unit, which replaced a diesel of another make. The D397 has justified its selection with outstanding performance.

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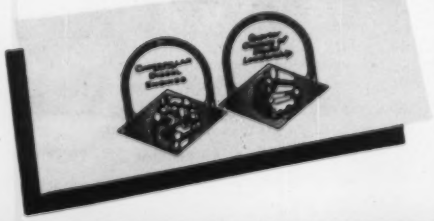


(Continued from page 73)

† **Tex., Killeen**—N. C. O. MESS AND BRANCH EXCHANGE—BA 12/17—U. S. Eng., 100 W. Vickery, Fort Worth N. C. O. Mess and Branch Exchange, at Killeen Base, ENG-41-443-58-2. Black & Veatch, 1500 Meadowlake Parkway, Kansas City, Mo., consult. engrs.

† **Arkansas**—BA About 12/19—U. S. Eng. P. O. Box 867, Little Rock, relocation of Brooklin School, Eureka Springs-Beaver and Beaver-West Roads, at Table Rock Reservoir, Carroll Co., ENG-03-050-58-41.

† **Tex., Fort Hood**—MOTOR REPAIR SHOPS—BA About 12/19—U. S. Eng., Box 1600, Fort Worth, Zone 2, battalion motor repair shops, ENG-41-443-58-4. CD 9/18.

† **S. D., Hot Springs**—AUTOMATIC SPRINKLERS—BA 1/7—Veterans Admin., Munitions Bldg., Wash., D. C., automatic sprinklers Bldgs. 9, 10 and 11 at Veterans Admin. Center, No. 40-5125.

† **Tex., Lufkin**—GENERATOR INSTALLATION—BA About 1/14—U. S. Eng., P. O. Box 1600, Fort Worth, generator installation AC&W Facility, Lufkin Air Force Base, ENG-41-443-58-9.

BUILDINGS—BA

† **Tex., Marshall**—BUILDINGS—BA About 12/10—U. S. Eng., P. O. Box 867, Little Rock, Ark., constr. Bldg. No. 50-G and modification of Bldg. No. 46-W at Longhorn Ordnance Works, ENG-03-050-58-13. CD 8/25/52.

▲ **Tex., Fort Worth** — DORMITORIES — BA 12/12 — Texas Christian University, c/o Dr. M. E. Sadler, pres., University Dr. (selected list of bidders) 3 story, brick, tile, concrete and steel girls' dormitory on campus. $1,100,000. Joseph R. Pelich, 1203 Trans American Life Bldg., archt. CD 11/11.

▲ **Tex., Bryan**—HOUSING—BA 12/17—City Housing Auth., Bryan, 110 housing units contained in 46 bldgs. $1,000,000. Wm. Nash, Box 41, Bryan, archt. Carter & Burgess, 1100 Macon St., Fort Worth, and J. W. Hall, 601 E. 26th St., Bryan, and Fred Benson, 400 North Ave., Bryan, engrs. CD 10/17.

▲ **Okla., Altus** — HOUSING — BA 12/18 — Purch. & Contg. Office, Altus Air Force Base, Altus, construct and finance 700 family Housing Units, Altus Air Force Base, INV. No. 34-612-58-9. $7,500,000. CD 4/5/56.

Tex., Fort Worth—SCHOOL—BA 12/18—Fort Worth Pub. Schools, Ed. F. Williams, bus. mgr., 3210 W. Lancaster St., 2 story, split level, brick, tile, concrete and steel East Side High School. $900,000. Plans deposit $50. Joseph R. Pelich, 1203 Trans American Life Bldg., archt. CD 5/2/56.

BUILDINGS—SLC

Tex., Victoria—BANK, etc.—Victoria National Bank, Victoria, soon lets contract 5 story bank-office addn., remodeling. $800,000. Hedrick, Stanley & Lightfoot, 5201 Fannin, Houston, archts.-engrs. CD 9/19.

HEAVY CONSTRUCTION—LB & CA

MISSOURI—State Hy. Comn., Jefferson City,

Mo.—**Storms-Greene Constr. Co. & Clark Constr. Co.,** 1207 S. 4 St., St. Joseph, Mo., CA $500,596, graded earth 4.755 mi. St. Francois Co.;

Mo.—**A. L. Koch,** Thayer, Mo., CA $80,508, granular surf. 3.957 mi. Ozark Co. Bids Nov. 1, awarded Nov. 13. CD 11/13, under LB.

▲ **G. L. Tarlton Contg. Co.,** 5500 West Park Ave., St. Louis 10, Mo. CA $1,174,000, est. $1,600,000. clear-water basin at Chain of Rocks Plant adjacent to new distr. pumping station on Mississippi River for St. Louis Water Division, ST. LOUIS, MO. City, Frank Kriz, acting pres. Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., St. Louis, Mo. Bids Nov. 5, awarded Nov. 12. CD 11/12, under LB.

▲ **NORTH DAKOTA**—State Hy. Dpt., Bismarck,

N. D.—**John Dieseth Co.,** Fergus Falls, Minn., CA $228,115, storm sewer, detour, WW and incid. 1.04 mi. U.S. 10 in Bismarck from Missouri River Bridge to Washington St. U-136 (6) and UG-136 (7), Burleigh Co.;

N. D.—**Woodrich Constr. Co.,** 201-18 Ave. S., Hopkins, Minn., CA $1,999,985, c. conc. 13.072 mi. Interstate Route No. 1 from Jamestown E. & W. I-01-06 (4) and 1-01-7 (9), Stutsman Co.;

N. D.—**W. H. Noel Co.,** Jamestown, N. D., CA $690,969, base, b. conc. surf. 15.059 mi. Interstate Route No. 1 and S. H. 1 from Jamestown E. and W., 1-01-6 (4), 1-01-7 (1) E.-56 (19) and US 622 (5) Stutman Co.;

N. D.—**Arne Anderson & Son,** Ada, Minn., CA $79,111, grading 14.493 mi. County Road from Velva East, S.-790 (2) McHenry Co. Bids Nov. 15. Grand total $2,998,180. CD 10/30.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Okla.—**H. D. Youngman,** Baxter Springs, Kan., CA $136,396, est. $128,805. stab. aggreg. base, bit. surf. 3.554 mi. State Hy. 103, Big Cedar, Leflore Co.; CA $210,379, est. $201,813. stab. aggreg. base bit. surf. 4.726 mi. State Hy. 103 Big Cedar, LeFlore Co.;

Okla.—**Ryan & Phelps Co.,** 7512 N. Western St., Oklahoma City, Okla., CA $188,043, est. $191,761, asph. stab. base, single bit. surf. 6.478 mi. Hy. 15 Forgan, Beaver Co.;

Okla.—**Gaines & Sons,** Miami, Okla., CA $110,067, est. $102,968, grading, draining 6.899 mi. Hy. 10, White Oak, Craig Co.;

Okla.—**Standard Industries, Inc.,** 2119 E. 11 St., Tulsa, Okla., CA $1,629,133, grading, draining 3.535 mi. U. S. 77 bypass Oklahoma City, Oklahoma Co.;

Okla.—**Pool Constr. Co.,** Box 540, Shawnee, Okla., CA $586,262, est. $651,718, grading, drainage 3.708 mi. US 77 bypass, Oklahoma City, Oklahoma Co.;

Okla.—**Banta Constr. Co.,** 410 E. Hackberry St., Enid, Okla., CA $469,911, est. $471,364, grading, draining, c. conc. 1.092 mi. US 64 Enid, Garfield Co.;

Okla.—**Erts Constr. Co.,** Box 3866, Oklahoma City, Okla., CA $135,693, est. $162,900, stab. aggreg. base, bit. surf. 3.578 mi. Hy. 27 at Castle, Okfuskee Co.;

Okla.—**Floyd J. Freeman,** 724 Laird Ave., Lawton, Okla., CA $116,191, stab. aggreg. base with b. conc. 1.633 mi. Hy. 7, Gatlettsville, Stephens Co.;

Okla.—**Smith Bros.,** Noble, Okla., CA $146,076, est. $146,155, stab. aggreg. base, with blended rock asph. surf. 41972 mi. Hy. 76E, Wade, Bryan Co.;

Okla.—**Quapah Constr. Co.,** Picher, Okla., CA $74,744, stab. aggreg. base, bid. surf. 2.611 mi. Hy. 10, east of Lenapah, Nowata Co.;

Okla.—**William Dills,** Fort Gibson, Okla., CA $191,569, est. $188,776, stab. aggreg. base, bit. surf. 4.453 mi. State Hy. 103, Big Cedar, Leflore Co. Grand total $3,984,464. Bids Nov. 13, awarded Nov. 14. CD 11/4.

▲ **TEXAS**—State Hy. Comn., Austin,

Texas Bitulithic Co., P.O. Box 10365, Dallas, Tex. CA $3,177,766. roadbed treat. soil cement base and concrete 14.765 mi. Hy. IH 30, Proj. I 800 (12), Hunt Co. Bids Nov. 12. CD 10/22.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**Barder Constr. Co.,** P.O. Box 647, Laredo, Tex. CA $595,547. structure flex. base and 2 course surf. treat. 20.69 mi. Hy. US 83, Proj. F 577 (22) Zapata Co.;

Tex.—**F & C Eng. Co.,** P.O. Box 2426 Houston, Tex. CA $1,935,360. concrete 4.602 mi. Hy. IH 45, Proj. I 466 (30) I 32 (22);

Tex.—**Fred Hall & Son,** P.O. Box 488, Valley Mills, Tex. CA $759,286. flex. base and 2 course surf. treat. 6.147 mi. Hy. US 77, Proj. F 331 (7) Falls Co. Bids Nov. 13. CD 10/22. Grand total $3,289,193.

▲ **TEXAS**—State Hy. Comn., Austin,

Ben Sira & Co., Flenenker Constr. Co. & Whittle Contg. Co., P. O. Box 11645, Dallas, Tex., CA $2,041,831, grading, structures, storm sewers and c. conc. 1.419 mi. Hy. US 77 & SH 356 Proj. I-22 (17) Dallas Co. Bids Nov. 13. CD 10/29.

E. H. Reeder Co., 2128 Hawes St., Dallas, Tex. LB $413,902, est. $443,350, 42 in. S.W. Feeder Main, FORT WORTH, TEX. City, c/o Thos. A. McCann, mayor, City Hall, Fort Worth, Tex. Bids Nov. 19. CD 10/15.

▲ **Texala Constr. Co.,** 8120 Stedman St., Houston, Tex., CA $1,109,645, northwest water mains, San Felipe and Post Oak Rds. to Nicholson and 20th St., etc., HOUSTON, TEX. City, City Hall, Houston, Tex. Bids Oct. 30. CD 11/8, under LB.

▲ **Northern Pacific Railway Co.,** H. R. Peterson, ch. engr., 176 East 5th St., St. Paul, Minn. Owner Builds. $1,408,000. remove second main line track and install centralized traffic control between Garrison and Missoula 68 mi. in 1958; $364,010, remove second main line track and install centralized traffic control between Kamm and Benz, 6.77 mi. welded rail; $96,410, remove second main line track and install centralized traffic control between Shirley and Tusler 1.85 mi.; $212,835, remove second main line track and install traffic control between Butte and Silver Bow 4.19 mi.; $219,005, remove second main line track and install centralized traffic control between Paradise and Weeksville 3.6 mi. welded rail; $158,655, remove second main line track and install centralized traffic control between Westfall and Superior, MONTANA. Grand total $2,458,915.

▲† **B. H. Baker, Inc.,** Box 173, Colorado Springs, Colo., CA $1,005,968, 4 support personnel dormitories, second increment, Air Force Academy, IFB 05-613-58-17, approx. 8 mi. north of COLORADO SPRINGS, COLO. Air Force Academy Constr. Agency, P.O. Box 1670, Colorado Springs, Colo. Skidmore, Owings & Merrill, 3333 N. El Paso St., Colorado Springs, Colo., archts.-engrs. Bids Nov. 5. CD 9/9.

▲ **NEW MEXICO**—State Hy. Dpt., State Hy. Bldg., Cerrillos Rd., Santa Fe,

N. M.—**L. B. Clark Co.,** 1200 Stanford St. N.E., Albuquerque, N. M. CA $1,062,225, 2 and 4 lane grading, drainage structures, base course, plant mix bit. surf., curb and gutter, 2 major multiple concrete box culverts, etc. 5.159 mi. U. S. 70 from Lincoln-Otero Co. Line-East, Fed. Aid Proj. F-021-1 (1), Lincoln Co;

N. M.—**Brown Constr. Co.,** 3525 Fourth St. N.W., Albuquerque, N. M. CA $1,000,073, 4 lane, grading, draining, base course, hot plant bit. surf., concrete curb and gutter, 1 major box culvert, etc. 6.912 mi. on U. S. 85, Belen-South, Fed. Aid Proj. I-091-3 (2) and F-001-3 (2), Valencia Co. Bids opened Oct. 25.

BUILDINGS—LB & CA

▲ **McGough Constr. Co., Inc.,** 1172 Selby Ave., St. Paul, Minn., LB $1,663,000 general contract 164 x 180 ft. St. John's Abbey CHURCH, basement and upper church, and 60 x 60 ft. chapter house, COLLEGEVILLE, MINN. St. John's University, Collegeville, Minn. Bids Nov. 8. CD 11/4.

Naugle-Leck, Inc., 714 Baker Bldg., Minneapolis, Minn. CA $700,000, general contract remodeling lower floors; adding 10,210 sq. ft. in interior court at

Easy, Proven Way to Permanently Bond New to Old Concrete – for less than 4¢ per square foot!

WELD-CRETE

Weld-Crete is the patented, job-proved liquid bonding agent which enables you to *permanently* bond new concrete, or cement plaster, *directly* to any other structurally sound surface no matter how smooth! No costly, time-consuming surface preparation. Just apply, let dry, and pour or trowel new concrete. Ideal for new construction, remodeling, repairs . . . *ramps, floors, precast shapes, driveways, highways, walls, machine mounts and pads.* Weld-Crete has equal bonding permanence all climates, all surfaces, all sorts of conditions. When used with quick setting cement topping you can lay new floors, ramps, driveways one day and run heavy truck traffic over them the next. Get fact-packed literature from your Building Materials Dealer, see Sweet's File, or write us direct. Address Larsen Products Corporation, Box 57561, Bethesda Maryland.

Typical **WELD-CRETE** Applications

GRANVILLE ST. BRIDGE, VANCOUVER, BRITISH COLUMBIA—One of the largest 8 lane bridges in North America. Here Weld-Crete was applied to bridge surface to bond cement dividing strips. Now, over 4 years later, bonds are as good as new. *General Contractor:* Dominion Bridge Company.

SEVEN CORNERS SHOPPING CENTER, FALLS CHURCH, VIRGINIA—During construction of this 600,000 sq. ft. structure, initially only part of floor was poured and floated to a smooth finish. Areas in which show windows would be added were poured as base slab only. Slab was coated with Weld-Crete. After store fronts were custom-built, delayed toppings of 1" to 1½" thick were poured with assurance of permanent bond to base slab. These toppings were then finished with asphalt tile, wood, or finish flooring of lessee's choice. Designed and constructed by The Kass Realty Co. of the Kass-Berger Organization under direction of J. Franklin Groff. *Concrete Contractor:* Moses-Ekco.

second floor and addn. to sixth floor level; lobby and lounge alterations, etc. to Y.M.C.A. BUILDING, MINNEAPOLIS, MINN. Young Men's Christian Assn., 30 S. Ninth St., Minneapolis, Minn. Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, Minn., archts. CD 7/5/56.

▲ **Holy Family Hospital,** Estherville, Iowa, cancelled bids to have been opened Dec. 11, 4 story, bsmnt., 50 bed HOSPITAL addn., ESTHERVILLE, IOWA. $1,-300,000. CD 11/13.

▲ **Winn-Senter,** 901 W. 43, Kansas City, Mo., LB Est. $2,500,000 general contract 11 story, 106 x 260 ft, brick, rein.-con. APARTMENT, incl. boiler room, storage, swimming pool, gymnasium, lock area, laundry, showers, kitchen, penthouse, KANSAS CITY, MO. Quality Hill Towers, West Terrace Redev. Corp., 910 R. A. Long, Bldg., Kansas City, Mo. Bids Oct. 30. CD 10/25.

▲ **Gamble Constr. Co.,** 5730 Wise Ave., St. Louis 10, Mo., CA $1,300,000, 2, 4 and 5 story additions to Marillac JUNIOR COLLEGE, incl. dormitories, dining facilities, offices, etc. NORMANDY (St. Louis 20, P.O.) MO. Marillac Seminary, Daughters of Charity of St. Vincent de Paul, 7800 Natural Bridge Rd., Normandy 20, Mo. Magulo & Quick, 4908 Delmar Blvd., St. Louis 8, Mo., archts. and engrs.

▲ **Sioux Falls Constr. Co.,** 800 S. 7th St., Sioux Falls S. D., LB $1,403,207 est. $1,950,000 (11 bidders) general constr. HOUSING at South Dakota State College, BROOKINGS, S. D. State Bd. Regents, Pierre, S. D. Bids Nov. 1. CD 10/18.

▲† **Gallery Chemical Co.,** 230 N. Braddock St., Pittsburgh, Pa., Own Forces, ETHYLENE UNIT at New High Energy Plant, for Dpt. of Navy, MUSKOGEE, OKLA. Foster Wheeler Corp., 165 Broadway, New York 6, N. Y., engrs.

▲ **Fluor Corp., Ltd.** 2500 Atlantic Blvd., Los Angeles, Calif., CA $1,500,000 redesign and altering No. 2 crude unit and design and constr. NAPHTHA UNIFINER, CORPUS CHRISTI, TEX. Pontiac Refining Corp., 3400 Lawrence Dr., Corpus Christi, Tex. CD 1/15/52.

▲ **Delta Eng. Corp.,** 2121 San Felipe Rd., Houston, Tex., CA Approx. $3,400,000 NATURAL GASOLINE PLANT, MIDLAND, TEX. Cities Service Oil Co., Midland and Bartlesville, Okla. CD 1/11/55.

Lee-Emmert Constr. Co., 2509 Lowriemore Lane, Fort Worth, Tex., CA $764,643 base contract SENIOR HIGH SCHOOL, MCKINNEY, TEX. McKinney Independent School Dist., McKinney, Tex. Bids Nov. 5. CD 10/22.

Marlang-Stafford Constr. Co., Box 463, Sherman, Tex., CA $661,302. HOSPITAL addn., SHERMAN, TEX. Wilson & Jones Hospital, c/o Frank Hare, bd. chn., Sherman, Tex. CD 11/12, under LB.

▲ **M. W. Kellogg Co.,** 711-3rd Ave., New York, N. Y. CA Est. $1,500,000, 3,500 b/d REFINERY, DENVER, COLO. Bay Petroleum Co., 1655 Grant St., Denver, Colo.

▲ **Carter Oil Co.,** 2813 3 Ave., North, Billings, Mont., Owner Builds. $1,500,000. renew existing equipment and add BOILER and FURNACE at owner's oil refinery to boost capacity from present 25,000 to 34,000 bbl. daily, BILLINGS, MONT.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 18, 19 California

BUILDINGS—BA

▲ **Calif., Fontana**—SCHOOL—BA 12/5—Fontana Unif. School Dist., 8425 Mango Ave., major addns. to Fontana High School. $1,425,000. CD 8/7.

▲ **Calif., Covina**—SCHOOLS—BA 12/10—**Covina Union** High School Dist., 165 W. Dexter St., 24 classrooms administration bldg., etc., Charter Oak High School. $1,000,000. Kistner, Wright & Wright, 1125 W. 6th St., Los Angeles, archts. CD 8/1.

Calif., San Bruno—SCHOOL—BA 12/16—San Bruno Park Elem. School Dist., c/o Supt., 500 Arcacia Ave., Crestmoor Elementary School at Crestmoor Park Development. $750,000. Plans deposit $50. Ernest Kump & Assocs., 450 Ramona St., Palo Alto, archts. CD 5/22.

Calif., Sacramento—LIBRARY—BA 12/17—State Div. Architecture, P. Wks. Bldg., 1120 N. St., 3 story, penthouse, structural steel cast-in place belled concrete piers, 56,500 sq. ft. library addns. at Sacramento State College. $884,800. Plans deposit $50.

▲ **Ore., Beaverton**—SCHOOL—BA 12/20—Beaverton High School Dist., constr. high school. $1,500,000. Plans deposit $50. Hayslip, Tuft, Hewlett & Jamison, 2040 S. W. 3rd Ave., Portland, archts.

HEAVY CONSTRUCTION—LB & CA

▲† **Worthington Corp.,** 2616 Western Ave., Seattle, Wash., CA $1,024,270, 8 fishway pumps for south shore fishway at Ice Harbor Lock and Dam, Inv. 57-95, Pasco, WASHINGTON U. S. Eng., City-County Airport, Walla Walla, Wash. CD 8/28, under LB.

CALIFORNIA—State Dpt. P. Wks., 1120 N. St., Sacramento,

Baun Constr. Co., Inc., 3229 W. Dudley Ave., Fresno, Calif., CA $770,395 widening by grading, surf. portions 17.4 mi. in net length, between Glenn and Codora Four Corners on State Rte. 45 between Orland and 1.6 mi. east of Sacramento River on Sign Rte. 32 and between Glenn and Hamilton City on Sign Rte. 45 and constr. bridge on Sign Rte. 32 at Pine Creek Lagoon, Glenn and Butte Counties. Bids Nov. 6, awarded Nov. 15. CD 11/13, under LB.

▲† **Connolly-Pacific Co.,** 1925 Xyater St., Long Beach, Calif., CA $1,687,170 North and Middle entrance jetties, Playa Del Rey, ENG-04-353-58-4, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Awarded Nov. 12. CD 9/10.

▲ **Smale & Robinson, Inc.,** 1033 Avalon Blvd., Wilmington, Calif., CA $1,607,730, rein.-con. wharf facility at Berths 143 and 145, LOS ANGELES, CALIF. Los Angeles City Harbor Dpt., 1300 City Hall, Los Angeles, Calif. Awarded Nov. 13. CD 11/13, under LB.

▲ **Griffith Co.,** 1060 S. Broadway, Los Angeles, Calif., LB $1,601,092 (15 bidders) Complex 1, East-West Runway-Taxiway sys., service road, etc., Los Angeles, International Airport, LOS ANGELES, CALIF. City Dpt. Airports, 5800 Avion Dr., Los Angeles, Calif. Bids Nov. 12. CD 10/31.

▲ **J. E. Young Pipe Line Contractor Inc., and H. W. Anderson,** 931 E. Rosecran Ave., Los Angeles, Calif. LB $6,366,304 (9 bidders) Spec. 201, constr. second San Diego Aqueduct to bring water from Colorado River, SAN DIEGO, CALIF. San Diego County Water Auth., Land Title Bldg., San Diego, Calif. Bids Nov. 18. CD 10/16.

BUILDINGS—LB & CA

Larsen-Ratto Constr. Co., 1901 Hedges Ave., Fresno, Calif., LB $871,054 (6 bidders) 48,000 sq. ft. frame, stucco JUNIOR HIGH SCHOOL, BARSTOW, CALIF. Barstow School Dist., Barstow, Calif. Bids Nov. 7. CD 10/28.

▲ **Haas-Haynie-Frandsen Constr. Co.,** 813 Olympic Blvd., Beverly Hills, Calif., CA $1,308,000. Indio HIGH SCHOOL, INDIO, CALIF. Coachella Valley Union High School Dist., Thermal, Calif. Bids Nov. 6, awarded Nov. 7. CD 11/11, under LB.

▲ **J. F. Walker Constr. Co.,** 3900 Whiteside Ave., Los Angeles 63, Calif., CA $1,014,880, 4 story, 62,000 sq. ft., brick STUDENT ACTIVITIES BLDG., LOS ANGELES, CALIF. Loyola University of Los Angeles, 7101 W. 80th St., Los Angeles, Calif. CD 9/27/56.

Morley Constr. Co., 7700 Sunset, Los Angeles, Calif. CA $717,000, general work, 4 story, penthouse, 90,500 sq. ft. LIBRARY, at Los Angeles State College, San Fernando Valley Campus, Northridge W.O. 4005GC-54, LOS ANGELES, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Nov. 6, awarded Nov. 12. CD 11/12, under LB.

▲ **Kavanagh Bldg. Co.,** 355 Fulton St., Fresno, Calif., CA $6,264,000. 522 HOUSES, near MILPITAS, CALIF. United Automobile Workers of America, 8000 Jefferson, Van Dyke, Mich.

BUILDINGS—LB & CA

▲ **W. J. Nicholson,** Santa Clara, Calif. CA $1,912,710 Emil Buchser HIGH SCHOOL, SANTA CLARA, CALIF. Santa Clara Union High School Dist. 551 Jackson St., Santa Clara, Calif. Bids Nov. 19. CD 11/6.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Nelen Ltd. & Assocs.,** Box 354, Fort William, Ont., LB $4,069,972. Spread V, constr. 367 mi. section of Trans-Canada pipeline between Port Arthur and Kapuskasing, Ont. ONTARIO and MANITOBA. Northern Ontario Pipe Line Crown Corp., c/o Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. CD 11/1;
Morrison Chivers Co., Ltd., 42 Industrial St., Leaside, Toronto, LB $4,070,590, Spread W (Ontario and Manitoba);
Majestic Contractors, Ltd., 405 Royal Trust Bldg., Edmonton, Alta., LB $3,815,308, Spread X (Ontario and Manitoba);
River Constr. Corp., Vancouver, B. C., LB $4,807,-903, Spread Y (Ontario and Manitoba).
Mannix Ltd., 332-7th Ave. S.W., Calgary, Alta., LB $4,064,015 Spread Z (Ontario and Manitoba).

▲ **Foundation Co. of Canada Ltd.,** 1900 Sherbrooke St. W., Montreal, Que., CA $8,508,790, superstructure, Air Terminal Bldg. at Montreal Airport, DORVAL, QUE. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Oct. 10, awarded Nov. 7, CD 10/25, under LB.

BUILDINGS—LB & CA

▲ **Fassel Constr. Co. Ltd.,** 2201 Kingston Rd., Toronto, Ont., CA Est. $2,000,000, 100 bed, HOSPITAL, sisters' quarters, chapel and power-house structural steel and masonry constr. steel bar joists plastering on tile walls, ELLIOT LAKE, ONT. Sisters of St. Joseph, 720 McLaren St., North Bay, Ont. Goven, Ferguson, Lindsay, Kaminker, Langley & Keenleyside, 10 Price St., Toronto, Ont., engrs.-archts. Awarded Nov. 6. CD 10/17.

▲ **George A. Crain & Sons Ltd.,** 555 Cambridge St., Ottawa, Ont., CA $4,400,000, 7 story, bsmnt. rein.-con., brick, stone HOSPITAL exten., OTTAWA, ONT. Ottawa Civic Hospital Bd., Carling Ave., Ottawa, Ont. Bids Sept. 12, awarded Nov. 4. CD 9/30, under LB.

McLarty Bros. & Brodie, 280 Wilson St., Sault Ste. Marie, Ont., CA $350,000, 200x240 ft., 40x100 ft. WAREHOUSE and 40x80 ft. OFFICE section, all steel Butler bldg. to be erected on rein.-con. fdn. SAULT STE. MARIE, ONT. National Grocers Co. Ltd., Gore St., Sault Ste. Marie, Ont. Awarded Nov. 14.

▲ **A. J. Lennox Contractors, Ltd.,** 44 Upjohn Rd., Bo 38, Postal Station R, Toronto, Ont., CA Est. $1,000,-000, 1 story, no bsmnt., 300x500 ft., WAREHOUSE Keating St. and Don Roadway, TORONTO, ONT. Leve Bros. Ltd. 299 Eastern Ave., Toronto, Ont. Bids May 28. CD 5/20.

Consolidated Bldg. Corp. Ltd., 89 Avenue Rd., Toronto, Ont., LB $595,784 (7 bidders) 8 story, bsmnt., 42x227 ft., rein.-con., brick walls, REGENT PARK NORTH HOUSING ANNEX, Old Oak St., TORONTO, ONT. Toronto Housing Auth., City Hall, Toronto, Ont. Bids Nov. 15. CD 10/21.

G. H. Montminy, Inc., 367 rue Richelieu, Quebec City, Que., CA $577,327 (4 bidders) 4 story, bsmnt., 50x125x175 ft., rein.-con. frame, brick walls, SECONDARY SCHOOL, St. Sauveur, rue Des Oblats, QUEBEC CITY, QUE. La Commission Scolaire Catholique de Quebec, 20 rue Quebec, Quebec City, Que. Leo Turcotte, 466 rue de la Couronne, Quebec City, Que., archt. Dufresene & Mainguy, 915 rue St. Cyrille Ouest, Quebec City, Que., engrs.

▲ **Bird Constr. Co. Ltd.,** 7th and Smith Sts., Regina, Sask., CA $2,148,529, PROVINCIAL HEALTH and WELFARE BLDG., REGINA, SASK. Saskatchewan Dpt. P. Wks., Parliament Bldgs., Regina, Sask. H. K. Black, Black Block, Regina, Sask., archt.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **J. H. Pomeroy & Co.,** 333 Montgomery St., San Francisco, Calif., U.S.A., CA Est. $7,000,000. 38 mi. railroad for transporting manganese ore from mines to head of Kaituma River, BRITISH GUIANA. African Manganese Co. (sub Union Carbide Co.), London, England.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Thailland**—BA 3/7—Royal Irrigation Department of Thailland, Bangkok, Thailand, constr. and completion of Bhumiphol Dam (Yanhee Dam), Powerplant and appurtenant structures, on Ping River about 65 kilometers upstream from Tak in northwestern part of Thailand and approx. 420 kilometers north of Bangkok by air. Plans deposit $10. CD 7/25.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Mich., Detroit**—Bd. Comrs., Wayne Co., City-County Bldg., plans by Giffels & Vallett and L. Rossetti & Assocs., 900 Cadilac Tower, Zone 26, water purification and pumping plant, Total est. $40,000,000. Hazen & Sawyer, 122 E. 42nd St., New York 17, N. Y., consult. engrs. Garrity & Mosher, 14050 W. Mc Nichols St., consult. engrs. on water transfer facilities. CD 4/12/56.

▲ **Que., Quebec City**—City, City Hall, filtration plant, incl. low-pressure pumping station, coagulation reservoirs with total capacity of 8 m.g., 16 filter reservoirs and clear water basins capacity of 48 m.g. $3,000,-000-$5,000,000. A. Longpre, c/o owner, waterworks engr. CD 1/7/48.

SEWERS, WASTE DISPOSAL

▲ **Md., Annapolis**—Anne Arundel Co. Sanitary Comm., Annapolis, Seven Run Interceptor, Towers Branch Interceptor, treatment plant area, sewage treatment plant, Stages 1 and 2 lateral sewerage sys. in Odenton. $3,186,750.

▲ **Mich., Dearborn**—City, City Hall, voted $4,700,000 bonds Nov. 5, sewer constr.

▲ **Mich., Lincoln Park**—City, William Suzors, clk., Lincoln Park, voted $2,670,000 bonds Nov. 5, relief sewers. CD 10/8.

▲ **N. J., Newark**—City, City Hall, Broad St., constr. South Side Interceptor Sewerage Sys. to connect with Passaic Valley Sewer Auth. sys. at Newark pumping and treatment station (ordinance appropriating $250,-000 to retain engineers just introduced). $6,000,000. CD 1/10/44.

▲ **O., Cleveland**—City, City Hall, voted $3,000,000 bonds Nov. 5, east side incinerator. CD 6/25.

▲ **O., Cleveland Heights**—City, City Hall, 2953 Mayfield Rd., Cleveland, Zone 18, voted $2,500,000 bonds Nov. 5, sewers. CD 7/25.

▲ **O., Shaker Heights**—City, 3400 Lee Rd., Shaker Heights, Zone 20, voted bonds Nov. 5, storm and sanitary sewers throughout city $3,000,000, Gilbert Assocs., Inc., 607 Washington St., Reading, Pa. consult. engr. CD 6/26.

▲ **O., Warren**—City, City Hall, defeated bonds Nov 5, storm relief sewers, $3,500,000. CD 8/2.

▲ **Pa., Lebanon**—City, City Hall, sewage treatment facilities, incl. imprv. or modernizing treatment plant or constr. entire new plant for complete treatment of sewage. $2,300,000.

BRIDGES

▲ **N. J., Paterson**—Passaic Co., Court House, renovation of 9 bridges, East Shore Greenwood Lake and Leaks Bridge in West Milford; Van Ness and Smith Bridges, Pompton Lakes, Beattie, Little Falls, Lincoln

(Continued on page 78)

Boulders are received, broken, and shipped from this central dock. On-the-job air power provided by the Tractair helps to minimize handling of material.

Tractair* Cuts Fill Costs; Breaks Rocks in R. R. Cars

Le Roi unit provides mobile air power for breakers, replaces slow hand-sledging.

Mobildrill attachment expands usage for construction and road-building.

Providing on-the-job air power for breaking rocks in gondola cars is a novel as well as a paying application of the Le Roi Tractair. Servtex Materials Co., New Braunfels, Texas, reports that this unusual use of the tractor-compressor reduces boulders to usable ½ cu. yd. size for dam fill faster and at less cost than the hand-sledging method used previously.

In this operation, boulders are brought by trucks and dumped into waiting gondola cars at the central receiving-shipping dock. As soon as the rocks are unloaded, the operator drives the Tractair close to the car and starts breaking.

Lowers Handling Costs

The self-propelled air supply keeps crews and equipment busy, assuring a steady flow of rock for construction and fill. What's more, reducing run-of-pit rock with Tractair-powered breakers eliminates delays and additional handling of material.

Bringing compressed air close to the job eliminates the need for positioning cars. Car-side air supply also shortens hose lines, thus assuring full-capacity power for the breaker. When desired, Tractair's 125 cfm output is adequate to operate two breakers at the same time.

Performs Other Jobs

Because of its ability to move from one work area to another under its own power, the Tractair is never idle. When its primary job is finished, the unit is used elsewhere.

"We use the Tractair to drill holes for blasting out placements for fence posts, power poles, and phone poles," the superintendent explains. Equipped with a Mobildrill attachment, the tractor-compressor is also used for building roads where boulders have to be drilled, blasted, and removed.

Find out how the Tractair can lower the cost of your jobs. Also investigate the cost-cutting advantages of Tractair attachments. Let Le Roi show you how this combination can minimize your outlays for one-purpose equipment, and enable you to perform specialized tasks at a fraction of former cost.

*"Tractair" is the registered trademark for Le Roi's combination tractor-air compressor.

WABCO

LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Newmatic air tools, portable and Tractair® air compressors, stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

Breaking rocks in gondola cars shows how versatile the Tractair can be in reducing costs. The Le Roi Mobildrill attachment is shown mounted on the rear of the tractor-compressor.

T-7

(Continued from page 76)

Patterson and Lackawanna, West Paterson, Schuyler, Pompton. $3,000,000.

▲ O., Cleveland—City, City Hall, voted $5,000,000 bonds Nov. 5, bridges. John Heffelfinger, city bridge engr. CD 6/25.

▲ O., Hamilton—City, City Hall, defeated bonds Nov. 5, bridge across Great Miami River at South Ave. $2,000,000. CD 6/13.

▲ O., Hamilton—City, City Hall, defeated bonds Nov. 5, underpass at South Hamilton crossing. $2,500,000. CD 7/22.

▲ WASHINGTON—State Toll Bridge Auth., Olympia, King Co.—bridge across Lake Washington from Seattle, adjacent to existing structure, $47,852,000. Bid call scheduled for 1962.
bridge across Montlake dist. of Seattle across Lake Washington to Evergreen Point, $25,475,000. Bids may be called next year. C. Andrews, 3201 Fremont Ave., Seattle, Zone 3, ch. consult. engr. CD 12/8/55.

STREETS AND ROADS

▲ Ark., Texarkana—City, City Hall, extensive street imprvs., incl. imprv. hys., roads, streets, drainage facilities, curbs, gutters, sidewalks, lighting and traffic control sys. $2,504,000.

▲ Mo., Jefferson City—City, City Hall, voted $2,875,000 bonds Nov. 5, Prop. No. 1, right of ways, street widening, city extens. and trafficways, and off-street parking lots. CD 9/26.

▲ O., Cleveland—City, City Hall, Zone 14, voted $6,000,000 bonds Nov. 5, freeways. Jay Katz, city engr. CD 6/25.

▲ O., Kettering—City, City Hall, defeated $2,000,090 bonds Nov. 5, streets. CD 7/23.

▲ PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Franklin Co.—Chambersburg by-pass $4,000,000, FAI.
Rte 11, Chambersburg to Shippensburg, $5,625,000, FAI.
Rte 11, Greencastle to Md. line $3,445,000, FAI.
Rte 11, Greencastle to Chambersburg, $6,375,000, FAI.
Rte 11, Shippensburg by-pass, $5,300,000, FAI. R. A. Farley, c/o owner, ch. engr.

▲ Tex., Dallas—Dallas Co., c/o Comrs. Court, Courthouse, voted bonds Nov. 5, constr. curbs, gutters and storm sewers along some of the road rtes. (no right-of-way costs, incl.) $7,345,100. CD 10/15.

▲ Tex., San Antonio—Bexar Co., c/o Comrs. Court, Courthouse, voted bonds Nov. 5, general roads imprvs. $2,275,000 (incl. right-of-way purchases, $500,000 gen. road work). CD 10/17.

▲ Que., Quebec City—City, City Hall, extension of Blvd. Charest from Blvd. Langlier to rue Marie de L'Incarnation, and widening former Morin St. $2,000,000.

EARTHWORK, WATERWAYS

▲ Mich., Detroit—Port of Detroit Comm., Troy H. Browning, chn., defeated $9,500,000 bonds Nov. 5, along with accompanying $1.6-mill tax increase proposal, port development, foot of Clark, next to Detroit Harbor Terminal. CD 9/25.

▲† Oregon—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., anticipate that bids for construction of Wasco Dam will be issued in January 1958. Inasmuch as snow conditions at the time of issue of specifications may make access to and examination of the site of the proposed work difficult, prospective bidders are invited to inspect the site in near future in order that they will be informed and in a position to submit a bid when the work is advertised. CD 9/17.

▲† Washington—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, Eagle Gorge Dam, Green River, near Kanasket. Total $27,000,000 (cost increased $4,600,000). Bids in March. CD 7/3/57, under LB and CD 8/19/55.

PUBLIC BUILDINGS

▲ Calif., Cupertino—SCHOOLS—Cupertino Union Elementary School Dist., Cupertino, voted $3,000,000 bonds Nov. 5 and request to State for loan of $5,000,000 for 5 new elementary schools and 8 classroom addn. to another. CD 10/28.

▲ Calif., Los Angeles—SCHOOL—Bd. Educ., 1425 S. San Pedro St., plans by Honnold & Rex, 306 N. Doheny Dr., Portola Junior High School, Tarzana. $2,460,000. CD 4/8/55.

▲ Calif., San Francisco—COURTHOUSE—City and San Francisco Co., Dpt. P. Wks., City Hall, defeated $22,150,000 bonds Nov. 5, courthouse and remodeling city hall. CD 8/15.

▲ Del., Wilmington—SCHOOLS—Mount Pleasant Special School Dist., Duncan Rd. and Phila. Pike, voted $1,195,460 Nov. 12, schools, in approving the bond issue voters assured the Big District $1,793,190 in state funds and a construction program totaling $2,988,650. CD 8/29.

▲ Ill., Chicago—HOSPITAL, etc.—Cook Co., 4 story, brick Out Patient Clinic, 1800 blk. W. Harrison St. $3,500,000; Nurses Home addn., Harrison and Wood Sts. $375,000. CD 6/11.

▲ Ill., Granite City—SCHOOL—Granite City School Dist. Bd., Paul Grigeby, supt. schools, 3100 Madison St., voted $2,200,000 bonds Nov. 2, 750-student Junior High School, West 25 St. and 3 elementary school bldgs. Joseph D. Standish, Spivey Bldg., East St. Louis, archt. CD 8/23.

▲ Mass., Waltham—SCHOOL—City, School Dpt., 55 School St., plans by William W. Drummey, 80 Boylston St., Boston, high school, Approx. $2,600,000. Constr. 1958/59.

▲ Mich., Roseville—COMMUNITY CENTER—Village, Robert Nunn, clk., 27700 Gratiot Ave., Community Center, incl. Municipal Bldg., Central Fire Station, Police Headquarters, Dpt. P. Works and Water Dpt. Bldg. and Community Bldg. $2,500,000. Constr. 1958. CD 3/20.

▲ Minn., Minneapolis—SCHOOL—Bd. Educ., F. W. Hill, asst. supt. for Business Affairs, 807 N. E. Broadway, plans by Larson & McLaren, 1901 Foshay Tower, Floyd B. Olson Junior High School, 50th St. and Knox Ave. North. $2,225,000. Constr. possible 1958.

▲ Neb., Kearney—SCHOOL—Bd. Educ., Kearney, voted $2,080,000 bonds Nov. 5, high school and addns. to elementary school. CD 10/14.

▲ N. J., Newark—GARAGE—City of Newark Parking Auth., City Hall, plans by Frank Grad & Sons, 11 Commerce St., 3 level parking garage under Military Park. (this is the same project as 1/8/57). $5,060,136. Ramp Bldrs. Corp., 230 Park Ave., New York, N. Y., consult. engrs. CD 1/8.

▲ N. M., Albuquerque—STUDENT UNION—University of New Mexico, Albuquerque, student union bldg. $3,000,000.

▲ N. Y., Glen Cove—SCHOOL—Bd. Educ., Glen Cove, voted bonds Oct. 22, high school, 24 acre tract on Desoris Lane, $2,800,000, Frederick P. Wiedersum Assocs., 85 W. Hawthorne Ave., Valley Stream, archts., CD 9/4.

▲ N. Y., New York—LABORATORIES—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by DeYoung, Moscowitz & Rosenberg, 205 E. 42 St., Zone 17, Proj. HL-49, public health laboratories for Dpt. Health. $10,300,000. CD 8/13/45.

▲ N. Y., Plainview—SCHOOL—Bd. Educ. voted bonds Oct. 25, Senior High School, on 23 acre tract on Central Park Rd., near Old Country Rd. $4,000,000, Knappe & Johnson, 390 E. 150 St., New York, Zone 55, archts. CD 2/28.

▲ O., Batavia—HOSPITAL—Comrs. Clermont Co., Court House, defeated bonds Nov. 5, county hospital. $2,000,000. CD 8/14.

▲ O., Cleveland—SCHOOL—Bd. Educ., 1380 E. 6th St., Zone 14, 1.2 mill levy voted Nov. 5, school bldg. program. $9,468,000. CD 9/20.

▲ O., Cleveland—EXHIBITION HALL—City, City Hall, defeated bonds Nov. 5, exhibition hall. $15,000,000. CD 7/16.

▲ O., Cleveland—COURT HOUSE—Comrs. Cuyahoga Co., Court House, Zone 13, defeated $4,000,000 bonds Nov. 5, court house repairs. CD 7/23.

▲ O., Cleveland Heights—SCHOOL—Cleveland Heights Bd. Educ., 1749 Lee Rd., Cleveland, Zone 18, defeated 2.75 mill levy Nov. 5 for high school addn. $2,400,000. CD 9/20.

▲ O., Columbus—HOSPITAL—Bd. Trustees Children's Hospital, plans by Dan A. Carmichael, 5 E. Long St., 5 story hospital addn. $2,000,000. CD 9/9/56.

▲ O., Elyria—COURT HOUSE—Comrs. Lorain Co., Court House, defeated bonds Nov. 5, court house. $4,500,000. Richard Hawley Cutting & Assoc., 10550 Euclid Ave., Cleveland, Zone 6, consult. engrs. CD 6/17.

▲ O., Elyria—SCHOOL—Elyria Bd. Educ., Elyria, defeated $3,500,000 bonds Nov. 5, school addns. CD 6/5.

▲ O., Kettering—SCHOOLS—Bd. Educ., Kettering, voted bonds Nov. 5, schools. $2,500,000. CD 7/22.

▲ O., South Euclid—SCHOOLS—South Euclid-Lyndhurst, Bd. Educ., 4777 Farnhurst Rd., South Euclid, voted $2,500,000 bonds Nov. 5, schools. CD 7/25.

▲ O., Toledo—SCHOOLS—Bd. Educ., Washington Twp. School Dist., c/o Ora K. Benton, clk., 5700 Whitmer Dr., Toledo, voted $5,000,000 bonds Nov. 5, schools. McLaughlin & Keil, 500 Dominion Bldg., Lima, archts. CD 3/29.

▲ Pa., Pittsburgh—APARTMENTS—Allegheny County Housing Auth., City-County Bldg., plans by Button & McLean, 119 E. Montgomery St., two 11-12 floors apartment structures, Homestead. $2,500,000.

▲ Tex., San Antonio—COUNTY JAIL—Bexar Co., c/o Comrs. Court, c/o Courthouse, defeated bonds Nov. 5, county jail, incl. site purchase. $3,000,000. CD 10/17.

▲† Puerto Rico, Mayaquez—REACTOR BLDG., etc.—Atomic Energy Comn., Oak Ridge, Tenn., U.S.A., plans by Catalytic Constr. Co., consult engr.-archt., 1528 Walnut St., Phila., Pa., U.S.A., reactor building, nuclear laboratory, plant house at Puerto Rico Nuclear Center. $2,800,000. CD 10/7.

COMMERCIAL BUILDINGS

▲ Calif., National City—HOSPITAL—Paradise Valley Sanitarium & Hospital, 2575 East 8 St., 4 story hospital addn. $3,000,000-$4,000,000. Constr. 1958.

▲ Calif., San Francisco—OFFICE—Bank of America, 300 Montgomery St., plans by Wurster, Bernardi & Emmons, 402 Jackson St., 550,000 sq. ft. floor space office bldg., Market St. between 11th and South Van Ness Ave. $5,500,000. L. H. & B. L. Nishkian, 1045 Sansome St., structural engrs. James Gayner, 45 2 St., mech. & elect. engr. Continental Service Co., (Bank of America Real Estate Affiliate) coordinator for constr. CD 5/23.

▲ Colo., Denver—SHOPPING CENTER—Buell Development Corp., 730 14th St., plans by T. H. Buell & Co., consult. engrs.-archts., 730 14 St., 300,000 sq. ft. addn. to Cherry Creek Shopping Center. $6,000,000. CD 9/21/48.

▲ Conn., Hazardville—HOUSING—Green Manor Estates, Inc., Middle Turnpike West, Manchester. Plans by Arnold Lawrence, 571 Porter St., Manchester, 100 houses, "Green Manor Ville", third section. $1,519,000.

▲ Ill., Highland Park—SHOPPING CENTER—Singer & Singer, 513 Central Ave., plans by Fitch, Schiller & Frank, 23 E. Jackson Blvd., Chicago, shopping center, parking area, E. Side Skokie Valley Rd., Hy. No. 41 fr. Park Ave. W. approx. ½ way to Rte. 22. $7,000,000.

▲ Ill., North Chicago—SHOPPING CENTER—Owner, c/o Agent, H. D. Olson & Co., 226 Washington St., Waukegan, 22 unit shopping center, sewers, water mains and parking area, 22nd St. fr. cor. of Dugdale Rd., approx. 3 blocks East. $4,000,000.

▲ O., Highland Heights—HOUSING—John Pesuit & Sons, 5199 Mayfield Rd., Cleveland, Zone 24, 180 homes on 4 new streets in area south of Wilson Mills Rd. and west of Ford Rd. $5,000,000.

▲ Okla., Tulsa—BANK—First National Bank, 15 E. 5th St., plans by McCune & McCune, Utica Square, drive-in bank facility, 6th and Boston Sts. $3,000,000.

▲ Tex., Houston—HOTEL—Doctors Motels, Inc., c/o Joe M. O'Fell, New Brotherhood Bldg., Kansas City, Mo., luxury type high hotel. $3,000,000. Constr. 1958.

▲ Tex., Houston—SHOPPING CENTER—Fontaine Community Center, c/o Lawrence O'Donnell, pres., Suburban Homes Realty Co., 730 Little York, plans by Andrew McLean, proj. archt., 2031 Alta Vista St., shopping center, 20 acre tract at Homestead and Parker Rds. $5,000,000.

▲ Wash., Seattle—HOSPITAL—Northwest Memorial Hospital, c/o Hazen & Lawrence, archts., 8626 Roosevelt Way, Zone 15, 1 story, 120 bed hospital, N. 120 St. and Meridian Ave. $2,189,590. Bids may be called early next year.

▲ W. Va., Huntington—HOSPITAL—Pallotine Sisters, St. Marys Hospital, plans by Vecellio & Kreps, Odd Fellows Bldg., Charleston, East Wing addn. to St. Mary's Hospital. $3,000,000. Bids early in December.

INDUSTRIAL BUILDINGS

▲ Calif., Los Angeles—HEADQUARTERS—Southern Counties Gas Co., 810 S. Flower St., Zone 17, 13 story headquarters building, Flower and 8 Sts. $2,250,000. Albert C. Martin & Assocs., 333 S. Beaudry St., consult. engrs.

▲ Colo., Denver—BAKING PLANT—United Biscuit Co. of America, Bowman Div., North Ave. and 25 St., Melrose Park, Ill., baking plant, W. 48 Ave. and Osage St. $8,000,000.

▲ Conn., North Haven—PLANT, etc.—Rockbestos Products Co., 285 Nicoll St., New Haven, Plans by Dewey & Kropper, 150 Causeway St., Boston, Mass., 250,000 sq. ft. Mfg. plant and office, Middletown Ave. $2,500,000.

▲ Ill., Evanston—FACTORY—Hoffman Electronics Corp., 920 Pitner, plans by Henry L. Newhouse, 737 N. Michigan Ave., Chicago, Ill., 1 story, brick factory, 920 Pitner St. $2,500,000.

▲ Mass., Andover—RESEARCH CENTER—Slyvania-Corning Nuclear Corp. (Sylvania Electric Products Co., Inc., 1740 Broadway, New York 19, N. Y. and Corning Glass Co., 1946 Crystal St., Corning, N. Y.) will not construct "Atomic Center" on 150 acre site. $4,000,000-$5,000,000. Project abandoned. CD 12/13.

▲ Pa., New Kensington—TRUCK TERMINAL, etc.—Burrell Constr. & Supply Co., 5th St., 1 story, 250,000 sq. ft., steel frame, block, truck terminal and dock. $2,500,000.

▲ Pa., Trafford—PLANT—Westinghouse Elec. Corp., Gatway Center, Pittsburgh, 1 story, 277,000 sq. ft., steel, brick and galvanized siding switchgear apparatus plant. $2,000,000.

▲ Tex., Houston—PLANT EXPANSION—Continental Emsco Co. (Div. Youngstown Sheet & Tube Co.) Garden Villas, Mykawa Rd., 2 large storage bldgs. machine shop, laboratory, etc., Mykawa Rd. $3,750,000. Constr. 1957.

▲ Wash., Tukwila—INDUSTRIAL—Andover, Inc., c/o White & Bollard, Inc., 2333 3 Ave., Seattle, Zone 1, 50 to 60 industrial bldgs., 550 acre industrial park on Green River, $100,000,000 (20 year program). J. Graham & Co., 1426 5 Ave., Seattle, Zone 1, consult. engrs.

▲ N. S., Trenton—POWER PLANT—Province of Nova Scotia, Parliament Bldgs., Halifax, power plant addn. $9,000,000.

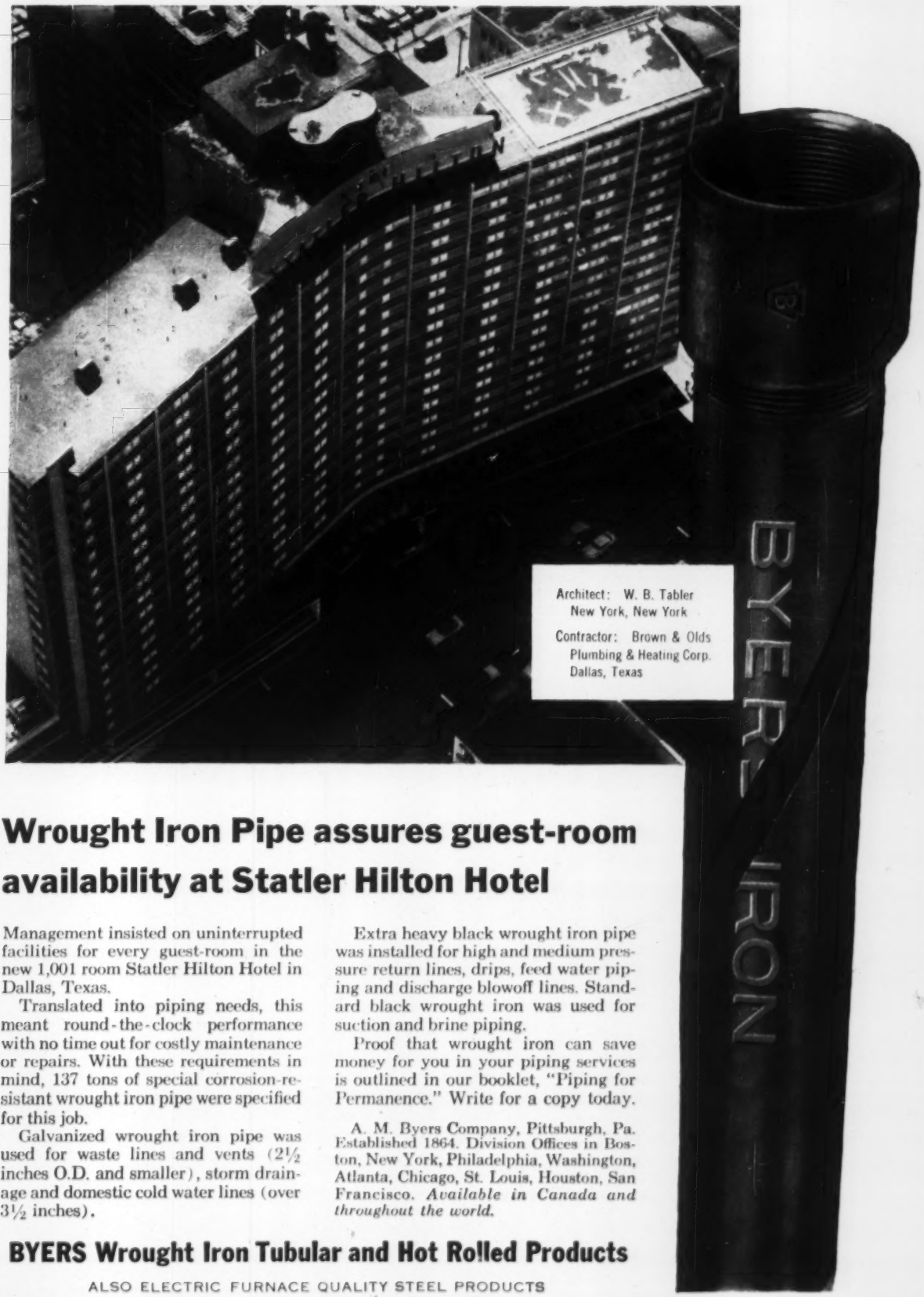
▲ Ont., Brockville—PLANT—Town, c/o Mayor, plans by Drevor & Smith, 81 Brock St., Kingston, (1st unit) to provide in excess of 30,000 sq. ft. plant project. $2,000,000.

UNCLASSIFIED

▲ Calif., Long Beach—MARINA—City, City Hall, Alamitos Bay Marina, Contr. 3, boat basins. $4,500,000. Moffatt & Nichols, Kress Bldg., consult. engrs. CD 2/15/56.

▲ New Mexico—GAS PRODUCTS PLANT, etc.—Sinclair Oil & Gas Co., 909 S. Boston St., Tulsa, Okla., Gas Products Plant No. 29, and wet gas gathering sys. with capacity 10,000,000 cu. ft. daily. $3,000,000.

(Proposal Advertisement see pp. 90 to 92)



Architect: W. B. Tabler
New York, New York

Contractor: Brown & Olds
Plumbing & Heating Corp.
Dallas, Texas

Wrought Iron Pipe assures guest-room availability at Statler Hilton Hotel

Management insisted on uninterrupted facilities for every guest-room in the new 1,001 room Statler Hilton Hotel in Dallas, Texas.

Translated into piping needs, this meant round-the-clock performance with no time out for costly maintenance or repairs. With these requirements in mind, 137 tons of special corrosion-resistant wrought iron pipe were specified for this job.

Galvanized wrought iron pipe was used for waste lines and vents (2½ inches O.D. and smaller), storm drainage and domestic cold water lines (over 3½ inches).

Extra heavy black wrought iron pipe was installed for high and medium pressure return lines, drips, feed water piping and discharge blowoff lines. Standard black wrought iron was used for suction and brine piping.

Proof that wrought iron can save money for you in your piping services is outlined in our booklet, "Piping for Permanence." Write for a copy today.

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BYERS Wrought Iron Tubular and Hot Rolled Products

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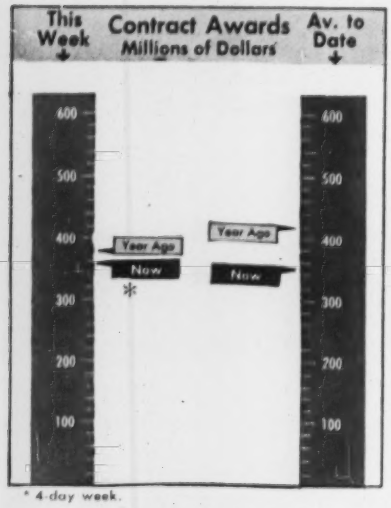
Construction Scoreboard

Activity this Week



* 4-day week.

AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 48 wks 1957	Chge '56-'57 %
	millions		
Federal	$17.5	$2,132.5	+36
State and Municipal	191.4	6,910.6	+13
Total Public	208.9	9,043.1	+18
Total Private	169.8	7,975.8	−36
U. S. Total	$378.7	$17,018.9	−15
By Type of Work			
Waterworks	$4.8	$337.5	+1
Sewerage	7.1	511.3	−7
Bridges	63.8	736.2	+25
Highways	44.7	2,774.3	+20
Earthwork, Waterways	24.1	944.0	+39
Buildings:			
Public, Excl. Housg.	49.0	2,191.1	+13
Public Housing	6.9	608.4	+106
Private Housing	78.2	2,884.8	−43
Commercial	31.8	1,651.0	−7
Industrial	52.1	2,943.7	−40
Unclassified	16.2	1,436.6	−13
U. S. Total	$378.7	$17,018.9	−15

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

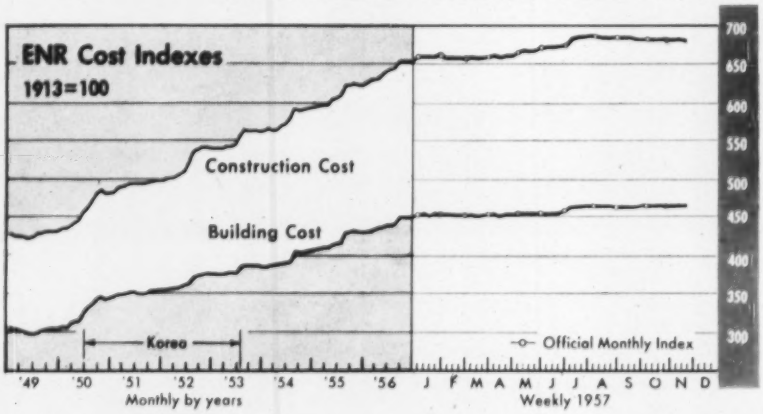
NEW CAPITAL FOR CONSTRUCTION

	Week of Nov. 21	Cum. 47 wks 1957	Chge '56-'57 %
	millions		
Corporate Securities	$225.2	$5,434.3	+24
State and Municipal:			
All Except Housing	226.3	5,183.7	+23
Housing	...	155.8	+71
Federal Loans	2.3	185.0	+38
Federal Aid	...	2,161.2	+102
Total Nonfederal	$453.8	$3,120.0	+33
Federal Appropriations:			
In U. S.	...	$2,777.0	−20
Outside U. S.	...	29.0	+82
Total New Capital	$453.8	$15,925.9	+19

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Nov. 21 1957	% Change from Oct. 24 1957	% Change from Nov. 22 1956
Construction Cost	736.48	−0.1	+4.6
Building Cost	518.36	+0.3	+3.6

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518



BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	Oct. 31 1957 (millions)	Percent Change from last Month	Year
Total U. S. (ENR reported)	$110,292	+0.6	+6.9
By Ownership—			
Private	46,487	+0.7	+5.3
State and Municipal	49,876	+0.5	+10.0
Federal	13,929	+0.1	+2.0
By Type of Work—			
Waterworks	2,364	+0.3	+9.5
Sewerage	3,310	+0.8	+6.1
Bridges	3,270	+0.4	+13.7
Highways	12,824	+0.5	+9.5
Earthwork, Waterways	12,431	+8.7	+8.9
Public Buildings	20,104	+0.7	+8.4
Industrial Buildings	16,678	+1.0	+0.7
Commercial Buildings	19,994	+0.5	+9.9
Unclassified, Private	9,815*	+0.6	+4.5
Unclassified, Public	9,504	−0.5	+3.5

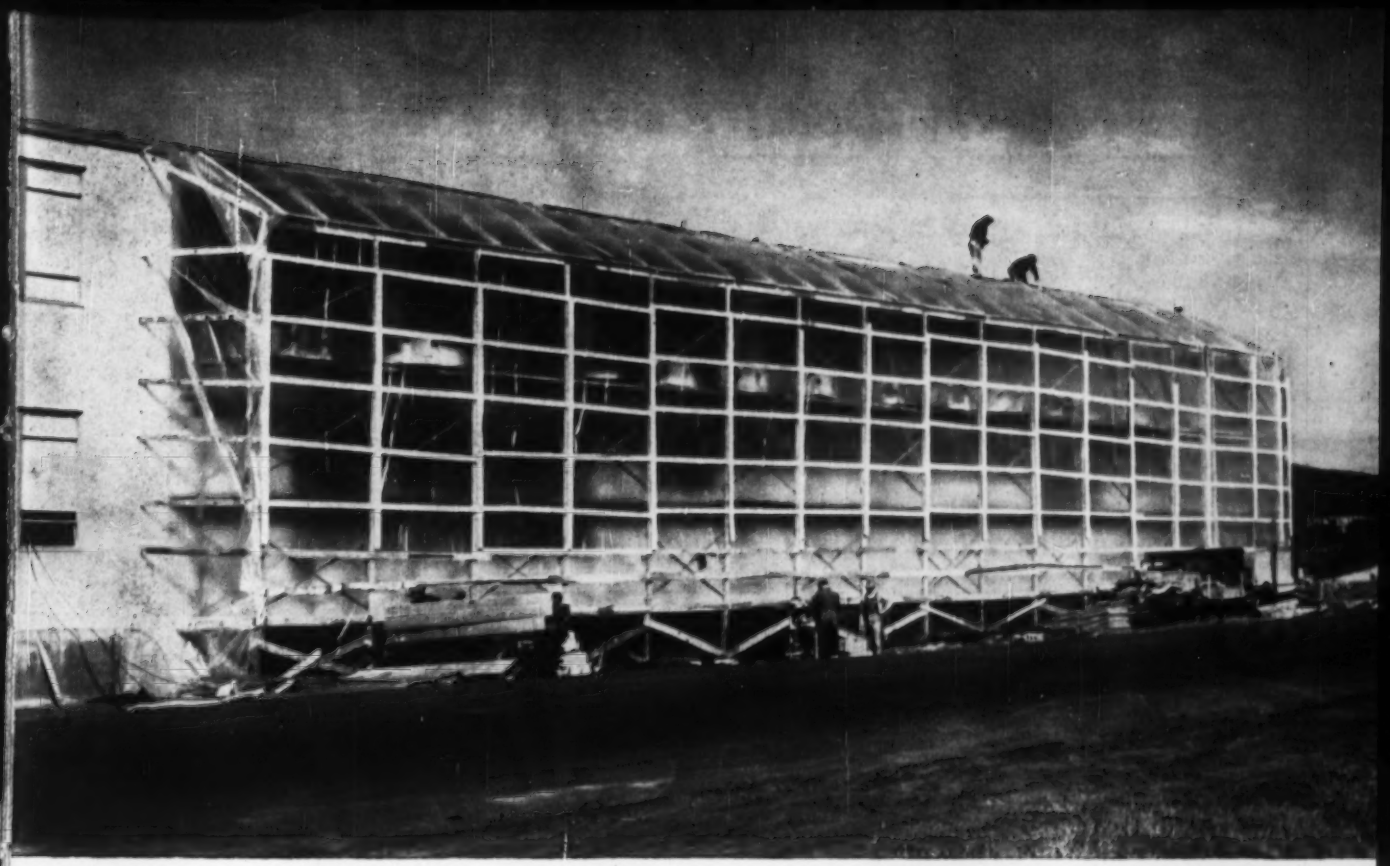
*Includes private bridges, $84 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

	Oct.	1957 10-months (millions)	Percent Change from '56 Oct.	Year Cum.
Total U. S. (ENR reported)	$1,741	$17,664	−5.8	−15.6
By Ownership—				
Private	816	7,852	−18.0	−28.1
State and Municipal	798	8,184	−0.2	−0.1
Federal	127	1,628	+143.5	−11.2
By Type of Work—				
Waterworks	38	391	+25.7	−4.4
Sewerage	61	496	+18.9	+6.9
Bridges	37	528	+227.4	+54.1
Highways	196	1,970	−10.4	+32.3
Earthwork, Waterways	115	1,598	+13.9	+121.3
Public Buildings	444	3,740	+18.2	−7.3
Industrial Buildings	371	2,852	−1.5	−43.3
Commercial; Mass Housing	144	1,882	−53.3	−32.4
Other Building	194	2,182	−12.2	−2.2
Unclassified, Private	107	936	+18.5	+7.1
Unclassified, Public	32	1,088	−48.3	−57.3

FLOW OF PROJECTS OUT OF BACKLOG INTO CONTRACTS

Total U. S. (ENR reported)	850	8,212	+4.3	−1.2
By Ownership—				
Private	349	3,110	−19.5	−7.6
State and Municipal	419	3,940	+28.6	+29.1
Federal	83	1,162	+47.8	+56.7



ADDITION to Guidance and Control Laboratory under construction at the Army Ballistic Missile Agency, with cover of VISQUEEN film. Outside temperature 30°. Inside temperature 68°. Heat source, two portable oil stoves and sunlight. Volume of enclosed space more than 100,000 cubic feet.

MASONRY CONSTRUCTION at Missile Agency Uninterrupted by Winter Cold

VISQUEEN film enclosure helps maintain 68° temperature within huge building area

Trade Mark

When unseasonable cold hit Redstone Arsenal last winter it threatened to stop urgent masonry construction for the Army Ballistic Missile Agency. Butler and Cobbs, the contractors, whipped the problem with the aid of VISQUEEN film.

Job superintendent C. B. Miller rented portable scaffolding, covered it with 100′ x 28′ sheets of VISQUEEN film, had the masons working after a delay of only five hours.

Two small portable oil stoves, plus the warmth of the sun, maintained comfortable working conditions, even when other masonry construction at the arsenal was suspended because of cold.

Be ready for winter emergencies. Don't let the weather stop you. A small investment in VISQUEEN film pays handsomely. See your dealer or send information request tag to VISKING COMPANY.

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Davis 210 digging flush alongside a building.

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Only the Davis Loader-Backhoe allows you unrestricted vision. You can see why this rig, with many such exclusive features gives you more **earning power.**

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Only the Davis 210 Backhoe lets you dig flush alongside a building, wall, or fence. Vertical stabilizers, right-angle digging, and 10,000 pounds breakaway power give you the **advantage on every job.**

The Davis Loader — with built-in strength and streamlined design — has been widely copied, but never equalled.
You would naturally think that this rig would cost you more, but it actually costs less than most other makes.

*** Davis Loaders and Backhoes are available for all popular models of International, Ford, Work-Bull, Ferguson, Case, Massey-Harris, Allis-Chalmers, Oliver, John Deere, and Minneapolis-Moline Tractors.**

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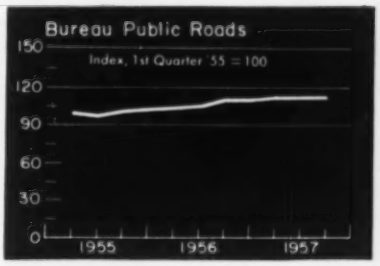
Road Prices Slip as Bidders Increase

Highway contractors this year are competing for new business against an increasing number of firms. And adding to the competitive pressure is the fact that available road work falls far short of the contractors' capacity to build roads (ENR Nov. 21, p. 19).

One result of these market forces is obvious—the roadbuilders are working with sharp pencils in order to come up with a winning bid this year. This is suggested by the third quarter decline in highway bid prices reported by seven out of nine states that compute quarterly bid price indexes (see charts below).

Bid prices on federal-aid highway projects, as computed by the Bureau of Public Roads (see chart above), remained stable in the third quarter after showing only a slight increase from the first to second quarter.



STABLE third quarter with index at 111.9.

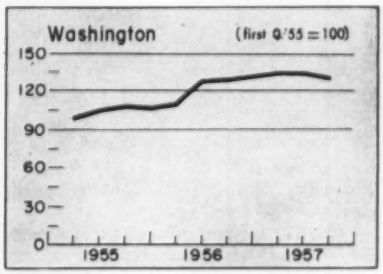
States showing a third quarter decline are Washington, down 3%; California, down 11%; Colorado, down 5%; Nevada, down 1%; New York, down 6.8%; Oregon, down 7%, and South Dakota, down 6%.

Only two of the states bucked this year's third quarter trend, with Idaho showing a jump of 49% and Texas a rise of 2%.

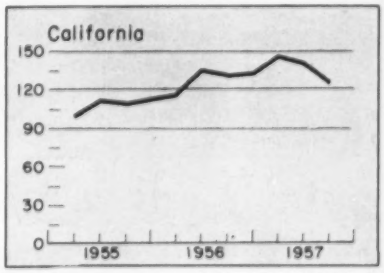
In California, contract lettings are attracting more bidders per job. During the third quarter of this year, the number of bidders averaged 6.2 per project, which is nearly double the average per job recorded during the third quarter of 1956.

Washington state this year had a 20% increase in the number of contractors eligible to bid on state highway projects, serving to drop the Washington Highway department's bid price index back down to about the same as

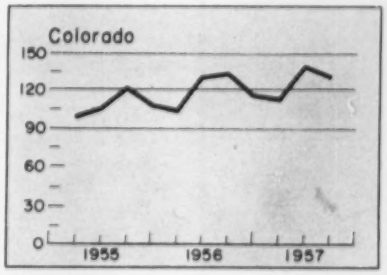
(Continued on page 84)



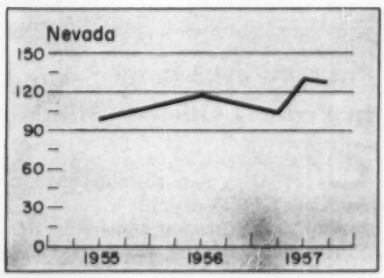
DECLINE of 3% 134.2 to 130.1.



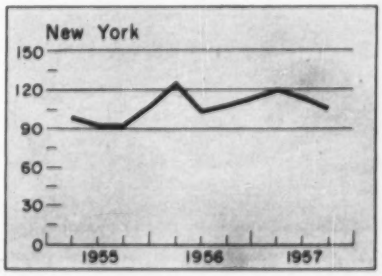
DECLINE of 11% from 141.0 to 125.5.



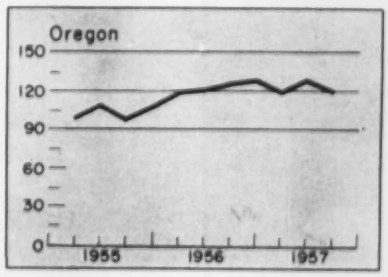
DECLINE of 5% from 138.0 to 129.2.



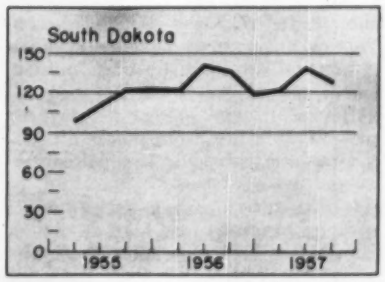
DECLINE of 1% from 130.4 to 128.7.



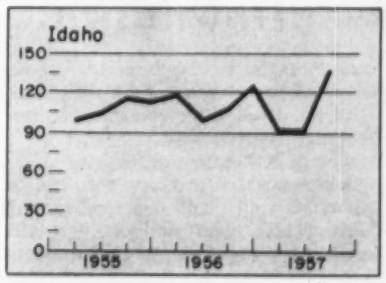
DECLINE of 6.8% from 115.2 to 107.4.



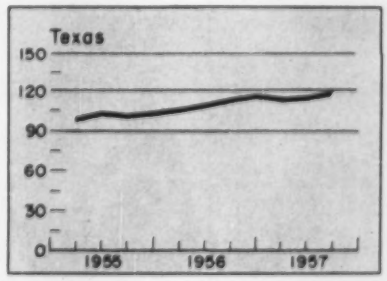
DECLINE of 7% from 129.4 to 120.4.



DECLINE of 6% from 138.0 to 129.2.



INCREASE of 49% from 92.0 to 137.1.



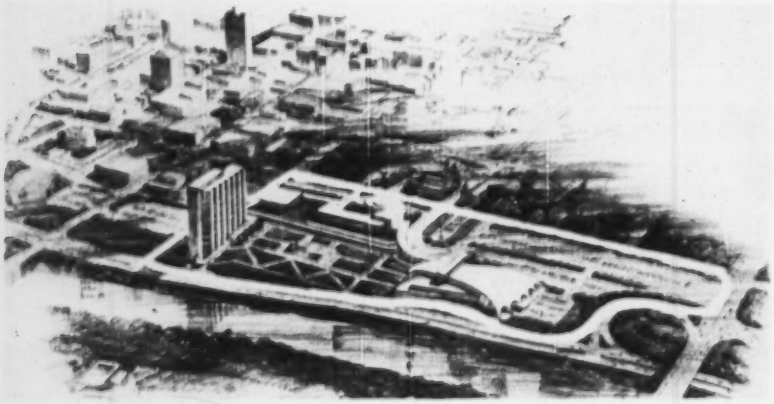
INCREASE of 2% from 114.4 to 116.3.

the third quarter of 1956. In addition, third quarter bids averaged 15% below engineers' estimates. A year ago, bids were running 7.5% below estimates. The highway department reported that some 1957 projects drew 20 or more bids.

Only last week, Pennsylvania (not shown) reported that a postwar record was set for the number of bidders when two highway construction projects each drew 18 bidders. Generally, an average road job in the state draws about six bidders.

An increase in competition for federal-aid highway projects (excepting secondary roads) also is apparent. According to the Bureau of Public Roads, bids per job rose to an average of 7.2 in the first quarter of this year, although during the second quarter the average dipped to 6.0 per project. However, this figure was up from the 5.0 average of 1956's second quarter.

TODAY the commercial core of Waco, Tex. is crowded, lacks parking facilities and buildings to be contained in area in foreground of drawing.



FUTURE planning for Waco calls for a new central shopping area and new public buildings to be contained in area in foreground of drawing.

Waco May Get New "Downtown"

Citizens of Waco, Tex., will make a decision about their downtown area Dec. 10 when a $12 million bond issue comes up for vote. If approved, the funds will start on its way a redevelopment project designed to put new life into the city's heart. The blueprint is contained in a report prepared by Harland Bartholomew & Associates, city planners. The report proposes a three-pronged attack on the area's incipient blight and shabbiness, a result of sharp competition from the more attractive and convenient suburban shopping centers.

The report recommends:

- Construction of a new civic center, including a city hall, civic auditorium, health center, library and museum. The auditorium, health center and museum would be new additions to the city's landscape.
- Development of a "pedestrian mall" in the central shopping district. This would provide a seven block area closed to vehicular traffic.
- Clearance of sub-standard housing in the central area where adequate all-day parking facilities would be supplied.

The planners found that Waco's central shopping area, as in many U.S. cities of similar size, had not kept pace with growth at the fringes of the city. Because of inadequate streets, scarce parking space, and outmoded and inconvenient shopping facilities, the report said, the retail and business core had lost ground to competition from outlying commercial developments. Public buildings, also, were too small or poorly located.

The mall idea was adopted largely because Waco's central shopping district already was concentrated in a small area and served by a good street and highway system. As Eldridge Lovelace, of the Bartholomew firm, said:

"The idea of an open mall to replace crowded city blocks for the downtown shopping center in cities like Waco has been often proposed and seldom carried out. In many cases it is not much more than a nice dream, too impractical to be actually achieved. The factors of size, location, circulation and character of the area make it a practical, workable idea for Waco, well adapted to the needs of the area."

The $12 million obtained from bonds will be used to purchase part of the land for the civic center, erect the health center building, and carry out street, drainage and park improvement projects.

Public Works Rank Second In Federal Officials Minds

Federal officials, speaking before the recent North Central Public Works Planning Conference in Minneapolis, confirmed the growing conviction that defense needs of the missile age may shoulder aside some public works projects (ENR Nov. 21, p. 23).

Dewey Short, Assistant Secretary of the Army, told the assembled contractors, government officials and union representatives that soaring military costs prohibit federal financing of all currently planned projects "today, tomorrow or in the foreseeable future."

He advised local and regional governmental groups to take the lead in planning and financing such projects without waiting for federal action. However, a project benefits the entire nation, he added, the federal government will continue its assistance.

This Building Is Different . . .

. . . Executives Are in the Center

The six-story home office building just completed for State Mutual Life Assurance Company of America in Worcester, Mass., appears from the outside to be quite ordinary. Its granite and brick facades with typical windows give the impression of solidity and stability usually expected of an insurance company in New England. There are no clues on the exterior that there may be departures from the ordinary inside.

But the 500,000 sq ft interior—designed for maximum efficiency in work-flow and communication—is different. Absent are the time-honored corner offices for executives. Instead, management is concentrated in a windowless central core.

The bulk of the company's staff works in large open areas.

Extending the 500 ft length of the structure, these work areas are 60 ft wide and free of columns.

The building has a structural steel frame, mostly bolted, with columns spaced 14 ft c-c along its length and 60 ft transversely. It contains three 60 ft bays.

In the middle of the center bay is a core containing moving stairs, six elevator shafts (one for future use) and six stairways. On either side of this core in the center bay are executive offices, enclosed with masonry partitions. These offices, and the outside work areas too, are air conditioned.

Ceilings in the private offices consist of a plaster "peninsula" almost surrounded by translucent plastic panels above which are closely spaced fluorescent tubes. With five different colors of tubes from which to choose and a panel of electronic switches, the occupants can vary both color and intensity of illumination. Each office also has a few recessed spotlights.

Fluorescent lighting is used in the open area. Recessed in acoustic-tile ceilings, the fixtures are single-lamp, deep aluminum troffers with aluminum baffles. Translighted ceilings illuminate corridors in the core.

Electrical, telephone and dictation wiring can be brought to within 18 in. of any point of a floor through the cellular steel flooring.

Hoyle, Doran & Berry of Boston, Mass., are the architects. Turner Construction Co. is the general contractor.

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- Fan and Blower Housings
- Dust Collector Housings
- Industrial Gas Mains
- Expansion Joints
- Hoppers and Bunkers
- Tanks and Vats
- Pressure Vessels
- Wind Tunnels
- Crane Bridge Girders
- Trolley Frames and Trucks
- Rigid Frames
- Roll-Over Fixtures
- Tank Turrets
- Gun Mounts
- Heavy Truck Bodies
- Engine Frames and Bases
- Crawler Frames
- Press Platens and Beds
- Press Columns
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- Furnace Roof Rings
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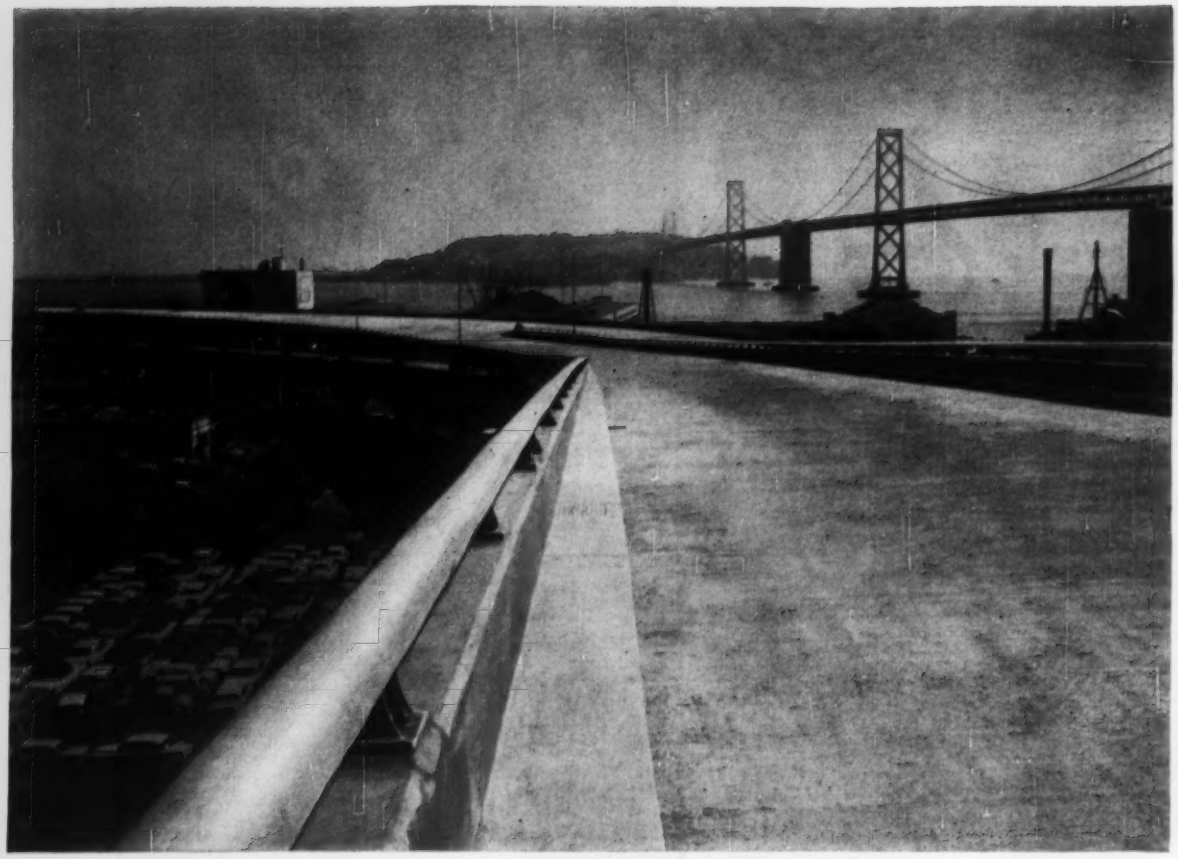

San Francisco Embarcadero Freeway; General Contractors, Charles L. Harney, Inc.; Railing Fabricator and Erector, Beaumont Furnace and Sheet Metal Corp., San Francisco.

KAISER ALUMINUM RAILINGS CUT COSTS ON NEW SAN FRANCISCO FREEWAY

By offering important money-saving advantages over other materials Kaiser Aluminum railings are paying off on the new Embarcadero link of San Francisco's freeway system. Here's where the savings add up:

Economical fabrication and erection—Because they weigh so much less and weld so efficiently, Kaiser Aluminum railings are far easier to work with—go up fast at minimum expense on any job.

Sharply reduced maintenance—Railings of Kaiser Aluminum resist corrosion—will not rust or warp—keep their attractive appearance for years and years without costly painting or care.

Beaumont Furnace and Sheet Metal Corporation, San Francisco, who fabricated and installed these railings, report that handling went much faster than usual—both at their shops and in the field. That's because a 10-foot extruded section of Kaiser Aluminum weighs only 43 pounds, a full 132 pounds less than its counterpart in steel. Welding was quickly and efficiently done.

These facts point up some of the ways Kaiser Aluminum highway products are cutting costs and speeding work on highway projects across the country. Find out how these products can save *you* money. Send for our free brochure now!

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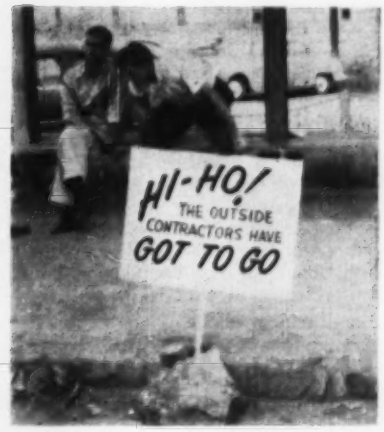

In the South . . .
Members of an industrial union try to persuade their employer to fire an outside contractor in an effort to obtain disputed "construction work" for its members.

In the North . . .
Union construction workers picket an auto plant to protest performance of in-plant "construction work" by company employees who are members of an industrial union, as the first big . . .

Showdown on Jurisdiction Draws Near

When the AFL-CIO Building and Construction Trades Department meets for its Golden Anniversary Convention in Atlantic City, N. J., next week, it will hold in its hands the future of the united labor movement.

Crucial issue before the convention delegates will be the jurisdictional conflict between building trades and industrial unions—a complex and explosive problem involving the principle of construction by contract and affecting the welfare of contractors and construction workers alike.

In an effort to preserve and protect their jurisdiction over construction work, the building trades will consider a number of proposals, including immediate secession from the AFL-CIO.

For the construction unions, the fight is one for self preservation—but the unions don't stand alone. During recent months, contractors who have hesitated to become involved in the hassle have grown increasingly disturbed over industrial union restrictions on the contracting-out of construction work. Groups that have shown the most concern are the National Electrical Contractors Association, the Associated General Contractors of America and the Mechanical Specialty Contracting Industries, Inc. Individually or jointly, they are giving the problem serious attention. And this month the University of Illinois announced it will launch a study of the dispute.

• **The problem**—The storm, which reduces itself to a bread and butter issue for members of the construction industry, is centered around a few questions of deceptive simplicity: If an industrial firm plans to have some construction work done, will the jobs go to outside contractors who employ building tradesmen or will they go to the plant's employees who are organized by a non-construction union such as the auto or steelworkers? Under union charters, where does the work jurisdiction of one union terminate and that of another begin? If a union is certified by the National Labor Relations Board as exclusive bargaining agent for "all production and maintenance employees" in a particular plant, does the certification give the union the right to demand in-plant construction work for its members? Where does "maintenance" work end and "construction work" begin? When an industrial plant consents to a labor contract clause restricting the right to give its construction work to outside contractors, is it nullifying a management prerogative and "buying peace at any price?"

Answers to these questions aren't easy to find. Although jurisdictional differences have plagued the labor movement for over half a century, the building trades unions claim that the present problem—which got most of its steam with the birth of the CIO—has grown by leaps and bounds since the labor merger two years ago.

Scores of complaints have poured into the national headquarters of the Building and Construction Trades Department charging that construction work in various industrial plants is being increasingly performed by members of the Industrial Union Department's affiliates. They claim, for example, that a $1.5 million structure in a California steel plant was built by members of the steelworkers union, that members of the paper makers union attempted to usurp construction work on a $40 million paper mill expansion program in Alabama, that plumbing and electrical work on an oil company project in Oklahoma was done by members of the chemical workers union.

In some cases the work is done under labor contract clauses granting construction work of certain types or in certain instances to plant employees. Such a clause gained national attention in 1952 when the steelworkers union sought to restrict the steel companies' right to contract out maintenance, repair and construction work. The clause it proposed was this: "The agreement shall apply to all work performed in and around the properties and mines of the companies and all such work shall be done by members of the United Steel Workers of America. No contracting out of such work shall be permitted." The proposal was loudly denounced by the building trades and by the AGC.

Calling the clause an unlawful restraint of trade and as effective as an illegal boycott or an illegal closed shop, the AGC said: "A prohibition against contracting-out in production industries generally means hundreds of thousands of trained construction workers would be required to leave their present employers, seek work under a new type of employer, have their skills go stale. . . and would split off such an important volume of the construction industry as to seriously cripple it." The AGC's position remains the same—but the clauses, often in a modified form, have spread.

The list of the building trades' com-

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plaints is long, the industries and unions they accuse of gobbling up their jurisdiction are diverse. "We face extinction," says one building tradesman. "We've lost some business," laments one contractor. "The problem vitally affects the construction industry and could seriously disorganize it," warns another.

Meanwhile, the building trades feel that time is working against them. For several reasons the Taft-Hartley Act, they say, works in favor of industrial unions and against the building trades whenever a jurisdictional dispute arises. They claim that the industrial unions, in an effort to maintain this advantage, have blocked their efforts to obtain amendments to the law. And they say that as long as the fight continues with the building trades on the losing end, the industrial unions are building up a pattern of "past practice" which will work to their advantage if and when an agreement is reached on settlement machinery for handling jurisdictional disputes.

• **Failures**—The AFL-CIO has tried unsuccessfully to solve the problem ever since the federation was formed.

The 3.5 million member Building and Construction Trades Department claims jurisdiction over all construction work, including alterations and repairs. Pitted against it is Walter Reuther's 7.2 million member Industrial Union Department which claims jurisdiction over all production and maintenance work. Both groups want and have worked for labor unity but neither will permit the "legitimate interests" of their affiliates to be "sacrificed."

In one sense, an essential key to the problem is one of definition. The tricky words are "maintenance," "alterations" and "repairs." Both side argue their claims are valid from the point of view of historic jurisdiction. But the building trades say the industrial unions have stretched the meaning of "maintenance" beyond the breaking point by making it cover construction work. An indication of this, says an official of the Detroit Building and Construction Trades, is the existence of a "stiff" apprenticeship program in the construction field conducted by the auto workers union for the benefit of its members.

• **Prospect**—As the matter now stands, even a settlement formula based on arbitration of individual and specific disputes holds no promise of acceptance unless and until the definitions of historic jurisdiction are defined sufficiently to afford adequate guidelines for arbitration. Without this protection, it would be difficult to keep from sliding into arbitration of basic jurisdiction—and the building trades declare they'll never consent to that.

Most admit that labor unity will never be achieved as long as the problem is unsolved. Although their two year grace period is about to expire, only two-thirds of the state and local AFL and CIO groups have merged. And this, incidentally presents an ironic situation for those who are waging the jurisdictional fight. Because of an August change in the constitution of the Building and Construction Trades Department, the grass-root members of the building trades will have direct representation at the convention for the first time and will have the best opportunity history has given them to air their jurisdictional grievances on the convention floor. But if and when the big issue reaches the AFL-CIO convention floor a week later, those whose state and local bodies have not merged will have no representation because the charters of those bodies will have expired on the eve of the federation's convention.

Those who are backing the secession resolutions expect "lots of support." Said the president of one local council: "Pulling out will bring the fight into the open. No-raiding agreements will then be void. We will still have to fight for jurisdiction, but from the outside. We won't be curbed by notices from the AFL-CIO."

Whether history will repeat the rebellion that ripped the AFL apart in 1936 is anyone's guess. For those dedicated to the aims and purposes of a united labor movement the decisions ahead are the most crucial yet faced by the AFL-CIO. The final answer may be slow in coming—but at least its general form will be spelled out in Atlantic City in the next few weeks.

Blasts Wage Fixing

AGC chapter calls for full investigation of Davis-Bacon wage rates

The Carolinas Branch of Associated General Contractors of America, at its 37th annual convention held last month at Hot Springs, Va., adopted a resolution calling on Congress to conduct a "complete" investigation of the wage-fixing activities of the U. S. Department of Labor.

The resolution, adopted by some 1,500 members, termed the administration of the Davis-Bacon Act by the

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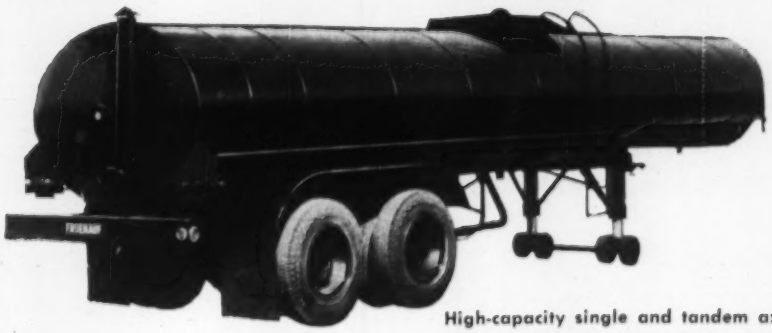

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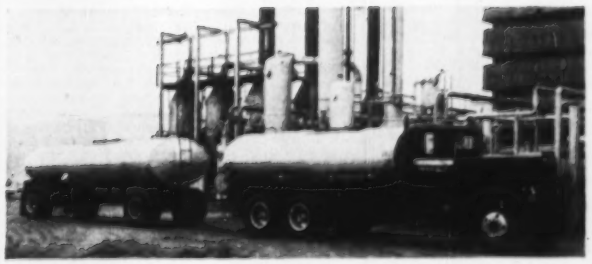

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Labor Department as "inept" and a "tremendously inflationary force" in the nation's economy.

Earlier, Robert Patten of Charlotte, N. C., in an address before the convention, had attacked the Labor Department for "artificially inflating the cost of construction by issuing fictitious and unrealistic prevailing wage decisions on federally financed construction."

Mr. Patten called on the contractors to support a "full and intensive" Congressional investigation of the wage-fixing division of the Labor Department.

Hitting at "wage fixers who are administering the utterly useless Davis-Bacon Act," he said the wage-fixing provisions of the act are designed to boost wages artificially in depression years and now are useless.

"Money spent on it at a time of inflation is completely wasted," he said.

He added that in non-unionized states such as North and South Carolina, general contractors must pay prevailing wages in order to hire workmen.

"In unionized states," he said, "the so-called prevailing rates are virtually dictated by the unions and the contractors must pay them. So why spend money on trying to establish rates that are already established?"

Mr. Patten said that in his opinion the Labor Department's activities are having a disruptive effect on the cost of federally financed construction work performed for private individuals and companies.

Operator School Approved For Texas Apprentices

An apprenticeship training program—for four crafts—proposed by the Texas Highway-Heavy Branch of the Associated General Contractors has been approved by the U.S. Department of Labor.

The training is to be offered for operators of motor graders, operators of boom equipment, operators of pneumatic and crawler type tractors with scrapers, and automotive mechanics.

Labor Brief . . .

• **Training**—In recognition of his contribution to apprentice training, the American Vocational Association this month presented an Award of Merit to Douglas Whitlock, board chairman of Structural Clay Products Institute. SPCI, which has pioneered in the field of pre-job training, has helped train more than 50,000 journeymen bricklayers since World War II and has developed a number of training materials.

OFFICIAL PROPOSALS

Bids: December 16, 1957.

Construction of Intercepting Trunk Sewers and Sewage Treatment Plant

Sealed bids for the construction of Intercepting Trunk Sewers and Sewage Treatment Plant will be received by the Village Board of the Village of Massena, St. Lawrence County, State of New York, at the Village Hall until 7:30 o'clock P. M. E.S.T. on the 16th day of December, 1957.

Bidding forms can be obtained and plans and specifications examined at the office of the Village Clerk at the Village Hall, or the office of William S. Lozier Company, Engineers, 10 Gibbs Street, Rochester, New York.

Copies of plans and specifications may be obtained upon the payment of twenty-five ($25.00) dollars per each set, which will not be refunded.

The work consists of the construction of the following work at the Sewage Treatment Plant:

SECTION "A"—underground utilities, site improvements, buildings and treatment structures and equipment.
SECTION "B"—plumbing and process piping.
SECTION "C"—heating and ventilating.
SECTION "D"—electrical and instrumentation.

and the following sections of Intercepting Trunk Sewers:

SECTION "S"—Intercepting Sewers
SECTION S-D—East Ovis and Water Streets
SECTION S-E—Grasse River
SECTION S-F—Raquette River
SECTION S-G—Miscellaneous Storm Water
SECTION S-H—Liberty Avenue
SECTION S-J—Raquette River
SECTION S-K—Bailey Road

Sections "A", "B", "C", "D", and "S" may be bid separately.

WILLIAM B. MC MILLAN
Village Clerk

November 21, 1957

Bids: January 9, 1958

New Jersey Turnpike Authority

CONTRACTS NOS. N-83A, N-83B, N-83C, N-83D and N-83E

Proposals are invited for the Contracts listed below, which involve the construction of one new building, designated as Building "B", complete, exterior grading and paving, and other incidental work at the U. S. Army's Caven Point Terminal, New York Port of Embarkation, Jersey City, N. J.

Contract No. N-83A—General Construction Work
Contract No. N-83B—Heating and Ventilating Work
Contract No. N-83C—Plumbing Work
Contract No. N-83D—Electrical Work
Contract No. N-83E—Grading, Drainage & Paving

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Standard Time on the morning of January 9, 1958, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after December 2, 1957, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 99 Church Street, New York 7, N. Y. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

November 28, 1957 A-1

Bids: December 3, 1957

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
CONSTRUCTION OF
ADIRONDACK SUBSTATION
NEAR BELFORT, LEWIS COUNTY,
NEW YORK
SPECIFICATION NO. PA-8-10
CONTRACT NO. T-5

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the Adirondack-Substation near Belfort, Lewis County, New York, until 10:30 A.M. Eastern Standard Time on the 3rd day of December, 1957, at the Authority's office 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

The work includes the construction of approximately one-half mile of structural steel 230 KV Transmission lines, and 230 KV substation complete with control building, fencing, landscaping and access road.

The work shall be completed on or before December 15, 1958.

Plans, Specifications and Proposal Forms may be obtained only from the Power Authority of the State of New York, at The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Twenty-Five ($25.00) dollars for initial set of Contract Documents and Fifteen ($15.00) dollars for each additional set, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the office of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, for the inspection by prospective bidders.

Bids must be made in duplicate in accordance with instructions contained in the information for Bidders Guarantee will be required with each bid in an amount not less than twenty (20) percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: December 17, 1957

Contract BP-140.005

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIER NO. 2
BUILDING FINISHES

Sealed proposals for construction of building finishes for the cargo shed for new Pier No. 2 at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1109, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, December 17, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, November 27, 1957

OFFICIAL PROPOSALS

Bids: December 12, 1957

Two Concrete Block Groins Sound View Beach

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Public Building Law and Highway Law, sealed proposals will be received, until 10:30 A.M., December 12, 1957 by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract B.P. 57-60 for
Two Concrete Block Groins,
Sound View Beach, Town of
Southold, Suffolk County, N. Y.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract B.P. 57-60 may be examined and obtained at the office of Mr. Milton E. Goul, 325 W. Main Street, Babylon, L. I., New York.

The deposit for Plans and Proposal Forms for contract B.P. 57-60 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit. The Engineer's Estimate of Cost for Contract B.P. 57-60 is $57,000.00.

Proposals for Contract B.P. 57-60 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the State of New York, Commissioner of Taxation and Finance for the sum of $2,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Public Building Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: December 12, 1957

Soil Explorations and Foundation Investigations

CAMPUS SITE DEVELOPMENT AREA
WASHINGTON AVENUE, ALBANY
ALBANY COUNTY
Spec. No. SM-111
NOTICE TO BIDDERS

Sealed proposals for the above project, in accordance with Specification No. SM-111, will be received by Henry A. Cohen, Director, Bureau of Contracts, Department of Public Works, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of the Department of Public Works, until 2:00 o'clock P.M., December 12, 1957, when they will be publicly opened and read.

Each proposal must be made upon the form and submitted in the envelope provided therefor and shall be accompanied by a certified check made payable to the State of New York, Commissioner of Taxation and Finance, of 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The specification number must be written on the front of the envelope. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal.

The State reserves the right to reject any or all bids. Successful bidder will be required to give a bond conditioned for the faithful performance of the contract and a separate bond for the payment of laborers and materialmen, each bond in the sum of 100% of the amount of the contract. Corporations submitting proposals shall be authorized to do business in the State of New York. Specifications may be examined free of charge at the following offices.

(a) Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. G. L. Nickerson, District Engineer, New York State Dept. of Public Works, 353 Broadway, Albany, New York.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City, New York.

Specifications may be obtained by calling at the offices of any one of the above and making deposit of $5.00 for each set or by mailing such deposit to the Bureau of Contracts, Department of Public Works, The Governor Alfred E. Smith State Office Building, Albany, N. Y. Checks shall be made payable to the Department of Public Works. Proposal blanks and envelopes will be furnished without charge.

Dated: November 15, 1957.

Bids: March 3, 1958

Iraq Government Iraqi Ports Administration. Construction of Wharves at Margil, Basrah.

1. Tenders are invited by the Iraqi Ports Administration for the construction of four wharves at Margil, Basrah, and works in connection therewith.
2. The Contract Documents and Instructions as to tendering for these Works may be inspected on and after the 2nd day of December, 1957, at any of the following places, namely:—
   A. The Offices of the Ports Administration, Basrah, Iraq.
   B. The Offices of the Ministry of Communications and Works, Baghdad, Iraq.
   C. The Offices of the Consulting Engineers, Messrs. Coode & Partners, 9 Victoria Street, London, S.W.1. England.
   D. The Embassies of Iraq in Washington, London, Paris, (c/o Swiss Embassy) and Bonn.
   E. Royal Legation of Iraq in Brussels and Rome.
   F. Embassy of Pakistan in The Hague, and Lebanese Legation in Berne.
   G. Honorary Consulate of Iraq in Stockholm.
3. Firms desiring to tender may obtain four copies of the Contract Documents and one set of the Drawings between the 2nd day of December, 1957 and the 3rd day of February, 1958, from either the Director General, Iraqi Ports Administration, Basrah, or the Ministry of Communications & Works, Baghdad, Iraq, or from the Consulting Engineers, Messrs. Coode & Partners in London, upon payment of ID. 50 (Iraqi Dinars Fifty) or £50 (Fifty Pounds Sterling) for each set of documents, which will not be returnable.
4. Tenders must be accompanied by a deposit of ID 10,000 (Iraqi Dinars Ten Thousand) or the equivalent in pounds Sterling to be made at the Rafidain Bank, Baghdad, or at its London Agents, The Midland Bank, Oversea Branch, 122, Old Broad Street, London, E.C.2.

Full detailed conditions as to this deposit may be ascertained from "Instructions to Persons Tendering" attached to the Contract Documents.

5. Tenders for these Works must be submitted to the Iraqi Ports Administration, Basrah, and will be received up to noon on the 3rd day of March, 1958.
6. Particular attention is drawn to Article 22 of the Instructions to Persons Tendering, namely that tenders will only be accepted from firms of contractors who have previously executed works of a similar nature and magnitude.

DIRECTOR GENERAL,
IRAQI PORTS ADMINISTRATION
BASRAH

Bids: December 13, 1957.

Sabine River Authority of Texas Iron Bridge Dam and Reservoir Sabine River, Texas

Sealed proposals for construction of Iron Bridge Dam and Reservoir will be received by the Sabine River Authority of Texas, P. O. Box 125, Greenville, Texas until 2:00 P.M. December 13, 1957 and then publicly opened at the Hunt County Court Room.

Principal items are 55,300 cubic yards of concrete, 4,810,000 cubic yards of compacted fill, 174,000 cubic yards of dumped riprap and other related work. Completion time 1,100 days. Plans and specifications will be furnished upon deposit of $40.00 per set. For particulars and/or documents address Forrest and Cotton, Consulting Engineers, 600 Vaughn Building, Dallas, Texas.

Bids: December 2, 1957

Soil Explorations and Foundation Investigations

NEW YORK STATE COLLEGES AT CORNELL UNIVERSITY
NEW YORK STATE TEACHERS COLLEGE AT CORTLAND
TOMPKINS AND CORTLAND COUNTIES
Spec. No. SM-110
NOTICE TO BIDDERS

Sealed proposals for the above project, in accordance with Specification No. SM-110 will be received by Henry A. Cohen, Director, Bureau of Contracts, Department of Public Works, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of the Department of Public Works, until 2:00 o'clock P.M., December 2, 1957, when they will be publicly opened and read.

Each proposal must be made upon the form and submitted in the envelope provided therefor and shall be accompanied by a certified check made payable to the State of New York, Commissioner of Taxation and Finance, of 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The specification number must be written on the front of the envelope. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal.

The State reserves the right to reject any or all bids. Successful bidder will be required to give a bond conditioned for the faithful performance of the contract and a separate bond for the payment of laborers and materialmen, each bond in the sum of 100% of the amount of the contract. Corporations submitting proposals shall be authorized to do business in the State of New York. Specifications may be examined free of charge at the following offices.

(a) Bureau of Contract, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. Wm. Robinson, District Engineer, New York State Dept. of Public Works, 333 East Washington Street, Syracuse, New York.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City, New York.

Specifications may be obtained by calling at the offices of any one of the above and making deposit of $5.00 for each set or by mailing such deposit to the Bureau of Contracts, Department of Public Works, The Governor Alfred E. Smith Office Building, Albany, N. Y. Checks shall be made payable to the Department of Public Works. Proposal blanks and envelopes will be furnished without charge.

Dated: November 7, 1957.

Prequalification Date: December 13, 1957

Board of Education Bureau of Construction

Notice Re: Prequalification Forms of Contractors
APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y. will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows: general construction, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures, and elevator installation for addition to and modernization to Far Rockaway High School, Beach 25th Street and Ocean Crest Boulevard, Borough of Queens.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y.

Bids, when advertised, will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors will expire on Friday, December 13, 1957.

WILLIAM H. CORREALE
Superintendent of School Buildings,
Design and Construction

Dated: November 21, 1957.

OFFICIAL PROPOSALS

Bids: December 9, 1957.

Government of the Virgin Islands

INVITATION FOR BIDS
(Construction Contract)
060-121-57-F
060-20-58-F
November 5, 1957

Renovation and Extension to Washington School. Renovation and Extension to Lincoln School. Renovation to Commandant Gade School New Kindergarten and Community Center For Savan (ALL ST. THOMAS, V. I.)

Department of Property & Procurement, Division of Procurement, Charlotte Amalie, St. Thomas, Virgin Islands.

Sealed bids in single copy for furnishing all labor, equipment, and materials and performing all work for the project described herein will be received until 2:00 p.m. Atlantic Standard Time, Monday, December 9, 1957, in the Senate Building (Bottom Floor—1st. door on left), Charlotte Amalie, St. Thomas, Virgin Islands, and then publicly opened.

Information regarding bidding material, bid guarantee, and bonds, plans and specifications and other contract documents are open for public inspection at the Office of the Public Works Commissioner, Charlotte Amalie, St. Thomas, Virgin Islands, and Charles L. Hilborn Associates, Consulting Architect-Engineers, 23 Crystal Gade, Charlotte Amalie, St. Thomas, Virgin Islands, for the following:-

ST-36—Renovation and extensions to Washington School
ST-37—Renovation and extensions to Lincoln School
ST-38—Renovation of Commandant Gade School
ST-28—New Kindergarten and Community Center for Savan

All in accordance with plans and specifications prepared by Charles L. Hilborn Associates, Consulting Architect-Engineers, 23 Crystal Gade, Charlotte Amalie, St. Thomas, Virgin Islands.

Copies of the plans and specifications may be obtained either from the Department of Property and Procurement, Charlotte Amalie, St. Thomas, Virgin Islands, 75 Kronprindsens Gade, (opposite of the Catholic School) or from the Consulting Architect-Engineers upon receipt of fifteen ($15.00) dollars which sum will be refunded upon return of the plans and specifications in good condition within ten (10) days after the date on which bids are received or else the entire deposit will be forfeited.

Each proposal must be accompanied by a certified check payable to the Government of the U. S. Government Virgin Islands or a bid bond to the favor of the Government from a reliable surety company authorized to do business in the U. S. Virgin Islands in an amount equal to two (2%) percent of the proposal. The certified check will be retained to pay for any damage or loss to the Government or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Government of the U. S. Virgin Islands reserves the right to consider bids for thirty (30) days after their receipt before awarding any contract and the right to accept a bid for the total, or any one or group of schedules one (1) to four (4), or to reject any or all of them.

For the guidance of contractors not familiar with the area, who may be interested in these projects, the architect-engineers estimate for the work is $100,000.00 to $150,000.00.

OFFICIAL PROPOSALS

Bids: February 20, 1958.

ADVERTISEMENT FOR SEALED PROPOSALS

For Furnishing and Erecting Two Meider Type Traveling Bridge Sludge Collectors for the Joint Meeting Sewage Treatment Plant at 500 So. First Street, Elizabeth, N. J.

Sealed proposals will be received by the Joint Meeting for the equipment listed above on Thursday, Feb. 20, 1958, at 4:00 o'clock in the afternoon, Eastern Standard Time, in the Council Chamber, City Hall, East Orange, N. J., at which time they will be publicly opened and read.

Specifications and proposal blanks may be examined and obtained at the office of the Secretary of the Joint Meeting, Room 312, City Hall, Newark, New Jersey, upon the payment of $20 for each set. The deposit will be returned only to bidders submitting bonafide proposals or who return the specifications in good condition within 10 days after the opening of the bids.

No bids will be received unless made in writing, on blanks furnished, and accompanied by a deposit of ten percent of the bid by certified check made payable to the Joint Meeting.

The Joint Meeting reserves the right to reject any or all bids and to waive any informalities therein.

By order of the Joint Meeting
MILO S. BORDEN, Chairman

Edward P. Decher
Secretary

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

NATIONAL COVERAGE

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36. December 12th issue closes Dec. 2nd

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Superintendent experienced in heavy sewer & water main construction under difficult conditions, by N. Y. State Contractor. Permanent position for qualified, responsible person looking for advancement with established firm. P-6165, Engineering News-Record.

Heavy contractor, N. Y. State, needs man to assume charge of take off, purchasing, engineering, expediting. Requires sound background & responsible field experience in heavier water, sewer & treatment plant work. Excellent opportunity for qualified person seeking & able to advance. Reply to P. O. Box 147, Colvin Station, Syracuse, N. Y.

Civil Engineer for Public Works Department of northern New Jersey suburban municipality for surveys and construction field and office. Good opportunity, excellent benefits and working conditions. State education, experience and salary requirement. P-6659, Engineering News-Record.

Engineers for municipal and industrial water supply, sewerage and treatment projects. Opportunities for permanent connection with long established firm of consulting engineers in mid-west. Both E.I.T.'s and engineers considered. Full information and reference in first letter requested. P-5889, Engineering News-Record.

POSITIONS VACANT

Superintendent experienced in concrete dam construction both arch and gravity. Permanent position for qualified responsible person with established Colorado company. Only qualified persons apply. P-6640, Engineering News-Record.

Graduate civil engineer 30-40 years of age for work in Midwest. Require experience in control of concrete. Some experience in control of soils or bituminous mixes highly desirable. $8,000-$9,000 range. P-6666, Engineering News-Record.

Arlington Heights, Ill. (approx popl 23,000) Village Engineer. Engineering degree, Illinois license, and considerable practical experience in design and construction. Age limits 30-50 yrs. Salary open. Apply F. R. Buechner, Village Manager.

Wanted: Electrical Engineer—Experienced in Power Plant Design. Capable of assuming charge of new department in expanding Midwest engineering firm. Possibility of affiliation to responsible party. Indicate availability. P-6686, Engineering News-Record.

Executive Director to carry out public relations and administrative duties for 69 year old Iowa Engineering Society. Engineering background preferred. Salary open depending upon qualifications. Inquire with resume 418 Hubbell Building, Des Moines 9, Iowa.

Experienced Estimator—General Contractor, commercial, industrial, civic and school construction, $100,000 and over, New Hampshire Civil Engineer or equivalent. Send resume of education, experience and salary required to P-6722, Engineering News-Record.

POSITIONS VACANT

Soils Engineer with civil degree and at least 15 years' experience to join construction supervisory staff of a large, long established company with extensive long-range expansion program. Successful applicant will supervise placement and inspection of graded material in rock fill earth core dam 300 ft. high. Preliminary work starting now and completion scheduled June 1961 with other projects in a ten-year program following. Applicant must furnish resume of experience with references relating to soils experience. Qualified applicant must pass physical exam similar to insurance exam at Company expense. Location in Southeast. Salary open. P-6607, Engineering News-Record.

The State of New Jersey has immediate vacancies for qualified civil engineers with experience in hydraulic engineering. Positions covered by Civil Service; offer excellent promotional opportunities; attractive retirement plan. Starting salaries range from $6600 to $7200 per annum depending upon qualifications. Write Dept. of Conservation & Economic Development, Div. Water Policy & Supply, 520 East State St., Trenton 25, N. J.

Estimating—Design work with field experience for general construction. Replies to 4545 North Keystone Ave., Indianapolis, Indiana.

Construction Estimator—Opportunity in growing and open organization for ambitious, aggressive man to prepare cost estimates, take offs, and expediting. Salary commensurate with ability. Send complete resume and references, with application for interview, to: P-6717, Engineering News-Record.

(Continued on Page 94)

Highway Engineers - Designers & Draftsmen
Bridge Engineers - Designers & Draftsmen
Architectural - Designers & Draftsmen

Permanent employment for qualified men. Ample opportunity for advancement based on merit; plus excellent retirement program, group life insurance, hospitalization, paid vacations and holidays. Salary commensurate with experience.
Architectural openings in Rochester, Pa. Highway & Bridge openings in Pennsylvania, Maryland, Mississippi, Ohio & West Virginia.

Air Mail Resume To: R. L. SHAW, *Personnel Director*

MICHAEL BAKER, Jr., INC. Baker Bldg. Rochester, Pa.

ENGINEERS
DESIGNERS

McKee has permanent openings at their Cleveland, Ohio, offices for men with at least 3 years' experience in any of the following:

Oil Refineries
Blast Furnaces
Steel Mills
Industrial Plants

In the following categories:

Piping Checkers
Process Piping
Piping Layout
Concrete
Structural
Electrical
Mechanical
Pressure Vessel
Mechanical Equipment
Specifications
Instrumentation
Estimators

Broad diversification of work in our 3 engineering divisions assures you security of employment.

Send detailed resume to
G. VICTOR HOPKINS

ARTHUR G. McKEE & Co.
2300 Chester Ave., Cleveland 1, Ohio

CIVIL ENGINEERS

Positions in California State Government in a variety of locations throughout the State for recent college graduates.

HIGHWAY

Office and field work in California's dynamic highway program.

BRIDGE

Design and field work in California's multimillion dollar bridge program.

SANITARY

Engineering control of water supply and waste disposal, air pollution and industrial hygiene.

No experience required for Junior position.

Junior positions
$481 to $530 a mo.

Positions open at this level only.
U. S. citizenship required.

Write for illustrated booklet:

C. S. Warner, Supervisor, Section E
801 Capitol Avenue
Sacramento 14, Calif.

STRUCTURAL
ENGINEERS
DESIGNERS
DRAFTSMEN

Prefer several years or more experience in any of these fields:

BRIDGES

BUILDINGS
EXPRESSWAYS
HYDRO PROJECTS
TEST FACILITIES*

Will consider lesser experience with good educational background, including several recent graduates to round out a planned expansion program. Occasional openings for combination field men. These are permanent additions to our regular staffs.

We are professional engineers engaged primarily in design which covers a wide scope of practice. The variety and unusual character for example, the proposed world's largest bridge project—offer excellent opportunity for professional development and advancement.

Immediate openings in our St. Louis general offices and occasionally in our San Francisco branch office. Confidential interviews can also be obtained at Washington, D.C., and Portland, Oregon.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Please write fully, including salary data, to

SVERDRUP & PARCEL, Inc.
ENGINEERS — ARCHITECTS
915 Olive St. Louis 1, Mo.

*We are designers of the technical facilities for the Arnold Engineering Development Center, operated by our subsidiary, ARO, Inc.

Southern University with increasing enrollment and expanding program needs instructors for teaching college level courses preparing students for the building construction industry. College degree preferred, but satisfactory experience will be considered.
Department of Building Construction
College of Architecture and Fine Arts
University of Florida, Gainesville, Florida

WANTED SALES ENGINEER HIGHWAYS

Fine opportunity for Engineer—35 to 50 years of age with sales ability. To contact various Eastern States for growing established organization.

P-6701—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Construction Estimator

Experienced in Piers, Docks, Bridges and associated water construction. Submit resume of experience, education and starting salary desired.

P-6631—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Mechanical Design Engineers

The Eimco Corporation, a rapidly expanding construction tractor and mine loader manufacturer, seeks engineers to assume responsibility for design and development of heavy mechanical equipment for mining and materials handling. Permanent positions. Company benefits.

If you are qualified by education and experience, we invite you to contact:

Personnel Director,
The Eimco Corporation,
P. O. Box 300,
Salt Lake City, 10, Utah.

ELECTRICAL ENGINEER

Electrical Engineer, preferably with hydroelectric plant background, to be responsible for all electrical installations in large hydroelectric plant located in the Pacific Northwest. State education, chronological experience and salary record, salary expected, reference and when available.

P-6583, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Director of Public Works

The Town of Natick, Massachusetts, 20 miles west of Boston, is inviting applications for the position of Director of Public Works.

His responsibilities will include charge of Water, Sewer, Highways, Equipment and Office staffs.

Qualification requirements are: supervisory experience in construction and administration, supplemented by a Civil Engineering degree or its equal.

Salary from $8300 to $9200—to be arranged.

Write for application form, or mail full details covering business and personal background, to:—

Public Works Commissioner
NATICK MASSACHUSETTS

General Sales Manager

NORTHERN CALIFORNIA

A newly created position managing the world wide sale of our engineering construction services offers a challenging opportunity with high level responsibility for a man with the following qualifications:

Specifically, we seek a person between ages 35-45 to exploit business opportunities in new industries. He must be well versed in executive selling and contract negotiations, and should be highly familiar with the general engineering construction field. He will be responsible for sales promotion and advertising, improving upon current sales activities, and the general coordination of the efforts of sales engineers. He reports directly to the General Manager. Salary is open.

We are a growing company headquartered in Northern California, engaged in the non-defense manufacture of pilot plants, heavy machinery, and related products. Our past performance and projected expansion of both operations and facilities represents well our interest in further growth and development.

In first reply, please include information regarding age, experience, compensation, and education. All replies confidential.

P-6592, Engineering News-Record
68 Post St., San Francesco 4, Calif.

STRUCTURAL DESIGN ENGINEER

Established engineering-construction firm with Chicago and New York offices. This position in Chicago office. Experience with steam-electric and industrial structures and foundations necessary. Excellent opportunity to become part of expanding progressive company. Send confidential resume.

P-6593—Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CIVIL ENGINEERS

Civil Engineers with experience in hydraulics, concrete, soils or specifications for design hydraulic structures in Harrisburg, Pennsylvania. Graduate Civil Engineers also required for Chief, Construction Branch and Resident Engineers on Dam Construction. Salary open. State experience, salary requirements and references.

P-6428, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

SALES ENGINEER

For immediate placement by nationally known electrical manufacturer. Must be familiar with secondary distribution systems. Prefer man with experience in this field and with EE degree. Excellent salary and benefits. All inquiries held confidential. Write stating qualifications.

P-6595, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SALES ENGINEER

Challenging opportunity for experienced Construction Engineer to do sales promotion work for a major producer of precast and/or prestressed concrete products. Will call on Consulting Engineers and such governmental groups as municipal sanitary districts, state and federal highway engineering offices, etc. with broad line of well established items. All replies confidential. Our engineers know of this opening. Please give us full information about yourself, including education, experience, and present salary. Write

P-6630, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ESTIMATOR & CIVIL ENGINEER

Experienced in Cofferdam & Form Design. Bridge, Highway and All Types of Heavy Construction. Salary Open. Send Resume and Salary Requirements.

OLE HANSEN & SONS, INC.
Box 553, Pleasantville, New Jersey

STRUCTURAL STEEL CONTRACT ENGINEER OR ESTIMATOR

MARINE EXPERIENCE HELPFUL

SEABOARD STRUCTURAL STEEL
P. O. Box 950, Wilmington, Delaware

(Continued from page 92)

EMPLOYMENT SERVICES

Engrs. Designers, Draftsmen, all fields Chem. Metallurgists, I.E.'s use our national coverage. Guilford Personnel Service, 502 American Bldg., Balto. 2, Md.

Construction Personnel placement service. Furnishing high grade constr. personnel to Contractors & Engineers, U. S. & Foreign, write G.M.C.-Lucas, Construction Consultant, P. O. Box 3771, Sarasota, Fla.

POSITIONS WANTED

Estimator-General Construction BSCE, 33, Registered. 10 years experience in estimating, design and construction. 6 years estimating includes buildings, industrial (paper, cement, steel, glass) and utility plants (boiler, sewage, water). Have held responsible positions including present. Desire to relocate in southeast. Anything considered. Prefer small, progressive Florida general contractor. Available 30 days. Rush. All replies acknowledged with detailed resume. PW-6559, Engineering News-Record.

Master Mechanic—Plant Engineer, Supt. of Maintenance, 15 years experience all types heavy equipment, erection and operation of sand & gravel, crushing, and asphalt plants, asphalt paving. Seeking permanent position with reliable co. or my experience for an interest. PW-6600, Engineering News-Record.

General Superintendent, 27 yrs. experience in all phases of Earth Moving Construction projects, especially Heavy Rock Work. Engineering background, Estimating experience, have large following competent skilled men. Available at once, will locate anywhere. PW-6611, Engineering News-Record.

General Superintendent—Chief Field Engineer, C.E. and Surveyor, 23 years experience, heavy construction, mainly highways, railroads, bridges, watermain & sewers, irrigation & drainage, chemical plants, oil refinery, with corresponding engineering and administrative work from start to finish desires position with progressive contractor or consultant. Prefers foreign assignment if possible South America. Worked on three continents, fluently speaks Spanish, French, German and Italian. Back in New York area from foreign job by December 5. Resume of request. PW-6652, Engineering News-Record.

Chief Structural Engineer, MASCE, BS, New York license. Thirty years in design and construction. Proven administrative and technical ability. Fully qualified to supervise design of industrial buildings, bridges and other structures. Will consider association with architect, available immediately. PW-6228, Engineering News-Record.

BUSINESS CONNECTIONS

Manufacturer of longspan joists is desirous of expanding its area of sales. Any concern that is at present selling allied products to the construction industry reply to

RW-6622, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

If interested in adding to your profits. Reply with brief history of your firm and products now handled.

POSITIONS WANTED

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Research, Russia and Us

THE EARTH SATELLITES fired into the sky by the Russians have been likened to the Pearl Harbor attack with respect to the effect produced in electrifying the American people to a positive course of constructive action. This is a result devoutly to be wished, but not yet proved. It is, moreover, a result obtainable only by some very fundamental changes in American thinking and procedures.

President Eisenhower in his Oklahoma City address pin-pointed the thought-change idea when he said that our schools must not only make more young people see the satisfaction of working in science, but imbue those who do not become scientists or engineers with a high regard for and an interest in it. In other words, the ideas that science is just a playground for dreamers, and that engineering is dull must disappear. As to changes in procedures, these, too, were touched on by the President when he called for "even greater concentration on basic research—that is the kind that unlocks the secrets of nature." Our present research setup is not adaptable to this greater concentration without some fundamental alterations.

Even if the Russian satellite launchings were not a Pearl Harbor, there should no longer be any doubt that they pose a challenge to be met. Not only did they create widespread respect for the scientific and technical prowess of the Soviet Union—thus lowering our relative standing in the eyes of the world—but they stand as a symbol of the development of the USSR to the status of a strong competitor in all fields of engineering. For what these people have done with rocketry, they can do in other fields.

Another compelling reason to regard Russia's advance as a serious challenge is that its engineers do not have to start from scratch since the fruits of U.S. technology and research are as available to them as they have always been to the rest of the world. Working from this background, their progress from here on depends on what they are willing to spend for research and development. Our only course is to advance faster from the present level than the Russians can.

In the field of applied research we should be relatively secure for the time being. In taking a laboratory finding and translating it into products for better living, there can be no question of U.S. superiority, and little doubt that our research setup encompassing government, industry and the colleges is adequately staffed and financed. It is when the demands for more basic research are faced that the need for change is clear.

So far about all that has been suggested is that we should spend more money on basic research. No doubt this is necessary, but it is a secondary consideration to who is going to do the basic research. Industry, except in rare instances, cannot devote its capital to this purpose, so it becomes a matter for government. But government has neither the facilities nor the personnel for vastly increased basic research effort.

The only ready-made answer is the colleges, where some of the personnel is already available and where the atmosphere for basic research is right. But here is where change is necessary because the colleges, although doing nearly a third of the nation's basic research, are also widely engaged in applied research, largely because their otherwise underpaid staffs can supplement their incomes from this source. If government, both federal and state, would finance the colleges generously on basic research, they could give up their applied research plum. The colleges are full of competent scientists and are ready and eager to undertake basic research if they had the funds.

In its National Science Foundation the federal government has an instrument ready made to direct such an effort. Encouraged, it could enlist the aid of state governments and industry.

The Russian challenge must be met by concrete actions. Bringing the colleges prominently into basic research would seem to be one of the most promising.

Safety Against Wind

MICHIGAN'S MACKINAC BRIDGE, which went into service this month, would make suspension bridge history by virtue of its size alone—its main span of 3,800 ft is the second longest in the world. But the structure has a deeper significance by virtue of the efforts of its designer, D. B. Steinman, to create a structure with as complete aerodynamic stability as possible.

Just about everything learned since the failure of the Tacoma Narrows Bridge in 1940 cast a shadow over suspension bridge design finds expression at Mackinac. Thus, it was emphasized that deeper stiffening trusses should be used; they are made a substantial 1/100 of the span. Open spaces should be left between the stiffening trusses and the roadway to permit the wind to flow through; spaces 10 ft wide are provided. Venting of the roadway, also for wind flow, might be helpful; a 24 ft strip down the center of the 48 ft roadway is paved with open-grid decking. Solid surfaces, which might permit wind pressure to build up, should be avoided where possible; the floorbeams are trusses instead of girders. In addition to a higher vertical rigidity contributed by deeper stiffening trusses, the suspended structure should have the maximum possible resistance to torsion in order to reduce the tendency for oscillations to start; horizontal truss bracing in the planes of both the top and bottom chords of the stiffening trusses are used for this purpose.

By highlighting the measures that can be taken to guard against aerodynamic instability, the Mackinac Bridge is a milestone in suspension bridge design.

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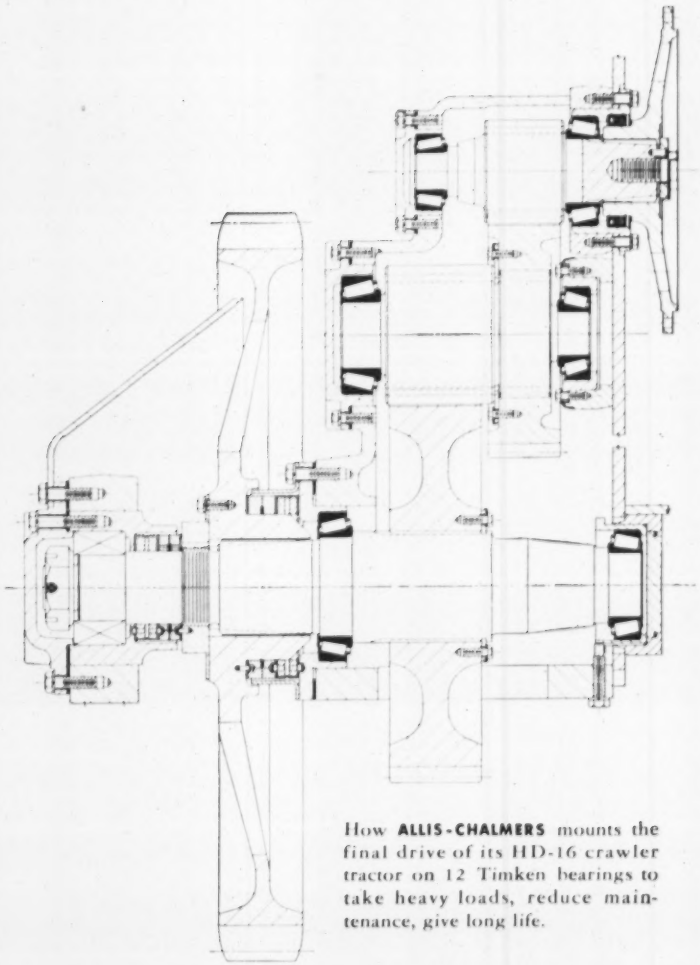
How Allis-Chalmers gears up its HD-16 crawler tractor for the big push



How **ALLIS-CHALMERS** mounts the final drive of its HD-16 crawler tractor on 12 Timken bearings to take heavy loads, reduce maintenance, give long life.

ALLIS-CHALMERS designed this rugged HD-16 crawler tractor with plenty of *push* for tough jobs—bulldozing, backfilling, logging and other earth moving jobs. And they designed it with features to give it extra *sales* push, too. One big feature is its Timken® tapered roller bearings. These Timken bearings easily take the terrific loads from push-and-pull clearing, loads that go through all the gears in the HD-16's final drive assembly mounted on Timken bearings.

Timken bearings take both radial and thrust loads in any combination. Their tapered construction does it. And because of full line contact between their rollers and races, Timken bearings have extra load-carrying capacity. They hold gears in rigid alignment. Gears mesh more accurately—gear wear is reduced. And Timken bearings practically eliminate friction because they're geometrically designed to have true rolling motion—precision-made to live up to their design.

And when heavy shock loads occur Timken bearings can take them, too. Their rollers and races are case-carburized to have hard, wear-resistant surfaces over tough, shock-resistant cores. The HD-16 works harder, with minimum maintenance.

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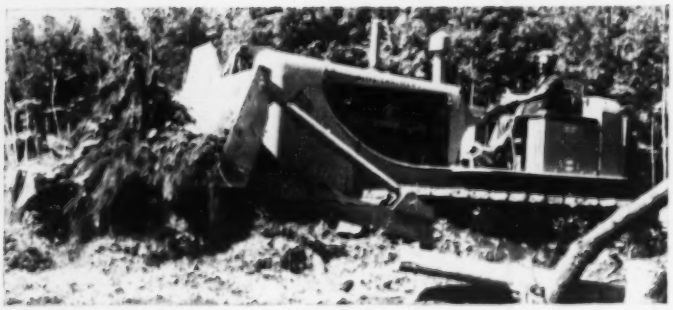

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